

CMP 262 Data Science Programming

CCM Catalog Course Description:

This course covers problem solving strategies and programming techniques specific to data analytics using an industry-standard, general-purpose programming language and tool set. Students will learn how to gather input from structured and unstructured sources of various formats, stored locally and remotely through cloud computing, and use programming libraries and application programming interfaces to efficiently process data and present information. Team and individual projects will analyze real-world, large datasets. Data integrity, privacy and security will be considered.

CLASSROOM EXPECTATIONS:

- Students are expected to participate fully in lecture, interactive demonstrations, collaborative team activities and individual lab exercises.
- Earbuds/headphones are not permitted during lecture/demonstration time.
- To succeed in this course, students should read the textbook, review the course notes and supplemental video tutorials, practice the concepts covered in each module and complete all assignments. **Late work is not accepted.**
- **Please check the course website regularly** for grades, announcements, supplemental material, and assignments.

Spring Section 26528

Credits: 3.0

Meeting Times: Tues 2-4:45pm

Room: EH 203

Prerequisite(s): CMP 131

Fundamentals of Programming

Co-requisite: none

Instructor: Professor Nancy Binowski

Contact: nbinowski@ccm.edu

Student Hours:

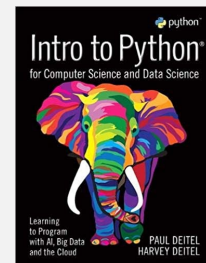
Tues 9:30-11:30am via Zoom (by appointment), Wed 11-11:30am, 2-2:30pm in EH-221 (drop-in, no appointment necessary). Otherwise, by appointment.

Zoom Link:

<https://ccm-edu.zoom.us/j/9219531669>

Web Location: Blackboard

Required Textbook:



Intro to Python for Computer Science and Data Science. Edition 1, Deitel & Deitel; Pearson, 2020.

Textbook Website: [Click here](#)

Topics Covered

Topic	Reading
Data Scientist Tools and Computing Environment	Chapter 1
Data Structures: Arrays, Lists, Ranges, Tuples, Dictionaries, Tables	Chapter 5, 6, 7
Data Analysis Libraries: numPy, Pandas, matplotlib	Chapter 7
Data Inputs: local data, text, CSV, SQL	Chapter 9
Cloud Computing: remote data, JSON (web scraping), RESTful APIs, SQL and noSQL	Chapter 9, 13, 17
Output: graphs and charts	Chapter 5, 6
Strings and Regular Expressions: pattern matching	Chapter 8
Object-oriented design and programming: Program structure, Classes and Objects	Chapter 10
Algorithms: Search, Sort, Recursive Algorithms, Efficiency of Algorithms	Chapter 11
Data Integrity	Supplemental Resources
Data Privacy and Security	Supplemental Resources

REQUIRED SUPPLIES:

Anaconda:

<https://www.anaconda.com>

Note that you will need to download and install several different Python library packages over the course of the semester.

Technical Support

Blackboard:

Contact the CCM Helpdesk at

SolutionCenter@ccm.edu

or 973.328.5600

Testing and Debugging	Integrated throughout course
Version Control Management, Collaboration and Sharing Source Code: git, GitHub	Supplemental Resources

Attendance Policy:

- This course meets once a week in-person. Attendance is REQUIRED.
- Please arrive to class on time and expect to work the entire class period.
- If for some reason you miss a class, it is up to you to reach out to the professor or classmate to find out what you missed. Your absence on an assignment due date does not exempt you from the due date.
- Attendance and promptness are part of your overall grade. Multiple absences/tardiness could effect your final grade up to half a grade.

Conduct Policies:

Expectations for Online Communication

- To access the Blackboard site, use web browser **Google Chrome** or **Mozilla Firefox**. Do **NOT** use Internet Explorer or Edge. Note: sometimes students experience problems with Safari and Chrome.
- Please check Mail and Announcements **frequently** as you will not be notified when there are new messages.
- Use Blackboard Messaging to contact the instructor. Allow 24 hours for a response. Weekend email will be responded to on the following Monday.
- Any message regarding an assignment should include the assignment name.
- If you are seeking specific help on your assignment, message the instructor via Blackboard Messaging and include the application file(s) as an attachment if necessary.
- **IMPORTANT: CCM Email should not be used to communicate with the professor regarding this class or assignments as it will not permit the sending of ZIP or code files. Use the Course Messaging feature in Blackboard to communicate with the professor.**

CCM Academic Policies:

CCM Academic Policies may be viewed on the college web site at: <http://www.ccm.edu/academics/academic-policies> or in the CCM College Catalog. All students enrolled at the County College of Morris are required to read the CCM Policy Statements.

Academic Integrity:

The academic integrity policy is in effect at all times in this course. I expect that all papers, exams, quizzes, and laboratory assignments submitted by each student reflects his/her own work, and that he/she did not give or receive unauthorized aid in any of this work. Students may not collaborate in the preparation of assignments, papers, laboratory assignments, or examinations without the expressed permission of the instructor. Examples of unacceptable forms of dishonesty include sharing code files, cheating, copying, plagiarism, unauthorized collaboration, submitting someone else's work as one's own; dishonesty through the use of technology such as sharing disks, files or programs; access to, modification of, or transfer of electronic data, system software or computing facilities.

Failure to abide by these expectations may result in failure on exam or assignment or failure in the course and a formal complaint of academic dishonesty will be filed against the student to the Academic Integrity Review Board. Students should ask questions of the instructor if they want to clarify exactly what may constitute academic dishonesty in this course.

STUDENTS SEEKING DISABILITY ACCOMMODATIONS:

In accordance with the policies underlying Section 504 of the Rehabilitation Act of 1973, the American with Disabilities Act (ADA) of 1990, the ADA Amended Acts (ADAA) of 2008 and County College of Morris policy, no qualified individual with a disability shall, solely on the basis of that disability, be excluded from participation to County College of Morris programs or activities. Students may seek reasonable accommodations for their documented disability by self-identifying and registering with the Office of Accessibility Services. Students who are approved through Accessibility Services for classroom accommodations are encouraged to meet with faculty members on an individual basis to discuss their specific needs. To register or learn about services, students may contact the Office of Accessibility Services at 973-328-5284 or disabilityservices@ccm.edu

Grading Criteria:

Your grade for the course will be weighted as follows:

Introduction	1%
Class Participation	5%
Discussions	10%
Assignments	24%
Projects (4)	41%
Final Project Milestones	4%
Final Project	15%

- Assignments/Projects are due prior to the start of class.
- You are usually given at least 7 days to complete an assignment. **Plan accordingly.** Do not procrastinate. Start early and you will have time to ask questions.
- **Late assignments/project are not allowed. No exceptions without a documented excuse (ie. Note from your doctor or employer).**

Course Content Calendar: The Course Content Calendar is tentative and subject to change. It is located on Blackboard.

Instructor's Syllabus Statement

This syllabus is subject to change due to student interests, special needs, cancellations, or instructor's decision.

You have read four pages worth of course detail and many expectations. However, you should have some expectations too. What should you expect from the professor?

- Knowledge of the material
- Assignments that reinforce what we are learning
- Preparation for each topic
- Clearly stated requirements
- Response to email/discussions within 48 hours (usually sooner)

Finally, Welcome! Explore your text options, make sure you have reliable technology, explore the online technology we will be using, and enjoy the course.