

Course Syllabus

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Lecture Time and Place

3:30 pm to 4:50 pm Tuesday/Thursday in Hamburg Hall room 1204

Although I will be doing live lectures during this course, **attending lectures in person will *always be optional***: I will post pre-recorded videos of **all** lectures on YouTube, and in fact those videos will be the "official" lectures: if I run out of time to cover certain material during a live lecture, I will refer you to the YouTube video for the additional material.

Instructor

John K. Ostlund

jostlund@andrew.cmu.edu (<mailto:jostlund@andrew.cmu.edu>) (or jkostlund@gmail.com)

Hours of availability: 10:00 am to 9:00 pm, 7 days per week, via email and Zoom

I will be available to you as much as I can, 7 days per week, unless I'm traveling.

Office Hours: Via Zoom, every Saturday and Sunday from 10:00 am to noon, U.S. Eastern time.

Teaching Assistants

Yingtao Luo yingtaol@andrew.cmu.edu (<mailto:yingtaol@andrew.cmu.edu>)

Jingwei Dai jingweid@andrew.cmu.edu (<mailto:jingweid@andrew.cmu.edu>)

- The primary jobs of the TAs will be to help me with grading homework assignments and quizzes, and answering students' questions
- They may also hold office hours, to be determined

Course Information*	Course Title: 95888-A1 Data Focused Python, Mini 1, 2024 Instructor: John K. Ostlund (jostlund@andrew.cmu.edu or jkostlund@gmail.com)
Prerequisites (if applicable)	Prior computer programming training or experience
Description*	This seven-week course focuses on the fundamentals of computer programming using the Python 3 programming language. Students will develop their problem-solving skills using the top-down procedural approach to build real-world based software applications. Pupils will also learn the basics of the software lifecycle: planning, development, testing, implementation and maintenance. Assignments will include weekly and bi-weekly fundamental checkpoint quizzes, top-down approach programming projects within a cap

oriented data focused project. Learners will study how to build professional, user-friendly computer programs to real-world applications in an IT-modeled environment.

Course Materials (if applicable)

Online Python Documentation:

docs.python.org/3.12/

Primary Textbook:

Python for Data Analysis: Data Wrangling with pandas, NumPy, and Jupyter **3rd Edition** 2022, Wes M. McKinney, ISBN-13: 978-1098104030, **(available for free online through the Carnegie Mellon University Library)**

Optional Books:

Automate the Boring Stuff with Python: Practical Programming for Total Beginners (Sweigart, Al) ISBN-13: 978-1593275990, ISBN-10: 1593275994

Starting Out with Python, 5th Edition, 2021, Tony Gaddis ISBN-13: 9780136679110

Software:

Anaconda 2024.06 with Python 3.12 version from anaconda.com/download

See the installation video link in the first Announcement.

Evaluation Method

The final grade will be out of 100%. The grading breakdown is listed below:

- Weekly Homework 20%
- Bi-Weekly Quizzes 35%
- Group Project
 - Draft Deliverables 10%
 - Final Deliverables 35%

I assign letter grades to each homework, quiz, and Group Project deliverable, then compute a course letter grades. On homework assignments, 90 or better out of 100 points is an A. Quizzes and Group deliverables are graded according to the Grading Scale below.

Letter grades have these Heinz standard QPA points:

A+	4.33	A	4.00	A-	3.67
B+	3.33	B	3.00	B-	2.67
C+	2.33	C	2.00	C-	1.67
D+	1.33	D	1.00	D-	0.67

Suppose your Homework and Draft Deliverable average grades were A (which is more or less expected) and your Quiz grades were A, A+, and B+, and that your Final Deliverables average grade was A-. Then your course grade would be:

$$4.00 * 0.20 + [(4.00 + 4.33 + 3.33) / 3] * 0.35 + 4.00 * 0.10 + 3.67 * 0.35 == 3.84483$$

	<p>I round rather than truncating, so this becomes a course letter grade of A.</p> <p>In order to get an A+ course letter grade, your course grade QPA must be > 4.0 (strictly greater than 4</p>
<p>Learning/Course Objectives*</p>	<p>Use the Python IDLE, Spyder, and/or PyCharm integrated development environments (IDEs) in intera mode to both test code snippets and author professional programs. Also, use Jupyter notebooks in in</p> <p>Learn Windows text command line usage for writing and executing Python source code.</p> <p>Develop problem-solving skills through practice and understanding of the top-down approach.</p> <p>Form and manipulate collections of data: list, tuple, set, dict, NumPy ndarray, and Pandas Series a</p> <p>Produce modules of function definitions for code reuse.</p> <p>Create object-based algorithms to solve real-world problems using the Python language.</p> <p>Be exposed to the SDLC (software development lifecycle) to understand how software applications ar industry.</p>
<p>Heinz standard Grading Scale*</p>	<p>A+ 97.00 – 100.00%</p> <p>A 93.00 – 96.99%</p> <p>A- 90.00 – 92.99%</p> <p>B+ 87.00 – 89.99%</p> <p>B 83.00 – 86.99%</p> <p>B- 80.00 – 82.99%</p> <p>C+ 77.00 – 79.99%</p> <p>C 73.00 – 76.99%</p> <p>C- 70.00 – 72.99%</p> <p>* No A+ grades will be given for homework, or for Project Draft deliverables: A is the maximum for the less expected). If a quiz turns out to be more difficult than expected, I may apply a gentler grading scl</p>
<p>Course/Topical Outline:*</p>	<ul style="list-style-type: none"> · Week 1 – Python Fundamentals · Week 2 – Collections, Type Conversion, and Web Scraping · Week 3 – Construction and Comprehension, Exceptions, User Input, Functions, Modules, and I · Week 4 – Introduction to Pandas · Week 5 – Regular Expressions, Reading/Writing Formatted Data · Week 6 – String Handling and Classes · Week 7 – Group Project Presentations due at end of week

	<p>* Subject to change</p>
<p>Schedule</p>	<p>Homework is due by 11:59 pm each Monday, with no exceptions granted.</p> <p>Online quizzes will be given on Friday and Saturday in Weeks 2, 4 and 6. You will have from 12:00 morning through 11:59 pm Saturday evening U.S. Eastern Daylight Time to take the 30-minute quiz.</p> <ul style="list-style-type: none"> · Week 1 - lecture · Week 2 - homework 1 due/quiz 1/lecture · Week 3 - homework 2 due/lecture · Week 4 - homework 3 due/quiz 2/lecture · Week 5 - homework 4 due/lecture · Week 6 - homework 5 due/quiz 3/lecture · Week 7 - Group Project presentations due at end of week <p><i>Note: The schedule is subject to change.</i></p>
<p>About Copilot or other Generative AI tools</p>	<p>You are welcome to use generative AI programs (ChatGPT, DALL-E, etc.) in this class. These programs are tools for learning and other productive pursuits, including completion of some assignments in less time, generating new ideas, or serving as a personalized learning tool.</p> <p>However, your responsibilities as a student remain the same. You must follow the academic integrity policies of your university and of this class. If you use one of these generative AI tools to develop content for an assignment, you are required to cite the tool's contribution to your work. In practice, cutting and pasting content from any source without citation is plagiarism. Likewise, paraphrasing content from a generative AI without citation is plagiarism. The university plagiarism policy (https://www.cmu.edu/policies/student-and-student-life/academic-integrity.html) applies to any use of a generative AI tool without appropriate acknowledgement and will be treated as plagiarism. This policy applies to an improperly cited use of work, whether that work is created by human beings alone or in collaboration with AI.</p> <p>In my class, you may use generative AI tools however you wish for learning or for homework assignments. In a coding class rather than a writing or discussion class, in my class you may even copy-and-paste code which parts of your homework you worked on using generative AI. You will not lose credit for using generative AI but you will lose credit for code or results that are incorrect!</p> <p>Finally, it is important that you recognize that large language models frequently provide users with inaccurate information, create professional-looking citations that are not real, generate contradictory statements, incorporate copyrighted material without appropriate attribution, and can sometimes integrate biased concepts. Code generation models can produce inaccurate outputs. Image generation models may create misleading or offensive content. (There can be made about things you find on Stack Overflow or other sites on the web.)</p> <p>While you may use these tools in the work you create for this class, it is important to note that you are ultimately responsible for the content that you submit. Work that is inaccurate, biased, unethical, offensive, or incorrect will be penalized.</p>

You may not have any access to generative AI tools during Quizzes. These will be given using Browser and Respondus Monitor to help prevent use of AI and other means of cheating.

Course Policies & Expectations

Assignment Submission:

Everything must be submitted in Canvas by the due date/time.

If you experience upload problems with Canvas, email me your work for grading IMMEDIATELY, AND DUE DATE/TIME, along with a screenshot of the upload error. When emailing me your work, I also need technical information to validate the issue (type out what the error message is that you are receiving, information, network information, file information, date/time of attempted upload, and screenshot of error message). I need the email to be sent to me or you will receive a 0% on the corresponding assignment. I need the email to be sent to me so I can validate your excuse with Canvas administration – it must be validated by error logging. If you contact me about Canvas submission issues after the due/date time, I cannot help you.

Late Policy:

Unless otherwise stated, no assignments will be accepted late. On the rare occasion that an assignment can be submitted late, the assignment will be accepted with a penalty of 10% of the total worth per day late, up to and including the late deadline announced. Do *not* ask me to make special exceptions for you alone – that is NOT fair to the rest of the class. NO assignments may ever be delivered by email. Do not request to have a Canvas assignment re-opened online for late submission. Budget for upload time to Canvas. Assignments are due by the start time of the class which it is due (unless otherwise noted).

Students with Disabilities:

Our community values diversity and seeks to promote meaningful access to educational opportunities. Carnegie Mellon University and your instructors are committed to your success and to supporting Section 504 of the Rehabilitation Act of 1973 as amended and the Americans with Disabilities Act (1990). This means that in general no individual who is otherwise qualified shall be excluded from participation in, be denied benefits of, or be subjected to discrimination in any program or activity, solely by reason of having a disability.

If you have a disability and have an accommodations letter from the Disability Resources office, I encourage you to discuss your accommodations and needs with me as early in the semester as possible. I will work with you to ensure that accommodations are provided as appropriate. If you suspect that you may have a disability and need accommodations but are not yet registered with the Office of Disability Resources, I encourage you to contact access@andrew.cmu.edu (<mailto:access@andrew.cmu.edu>).

Academic Integrity:

Carnegie Mellon University sets high standards for academic integrity. Those standards are supported by a community of students, including those who serve as academic integrity hearing panel members and hearing officers. The presumptive sanction for a first offense is course failure, accompanied by the transcript notation "Violated Academic Integrity".

Academic Integrity Policy.” The standard sanction for a first offense by graduate students may be suspension or expulsion. Please see <http://www.cmu.edu/academic-integrity/> for any questions.

Cell Phones, Smartphones and other handheld wireless devices:

Other than during class breaks, please silence ring tones and refrain from engaging in calls, messaging, or social media during class time. All devices must not be visible during quizzes.

Policy Regarding Students Using English as a Foreign Language:

Assignments in this course are graded with reference to evidence of the acquisition of concepts, presentation, and accuracy of information. Having done business in countries that use languages other than English, the use of an unfamiliar language can result in unusual word choices or grammatical errors that affect the overall understanding of the information. Therefore, we will take into account your need to function in a language that may be unfamiliar to you. We will provide feedback as appropriate if we feel that language or grammar used in assignments would be best if it were configured in a different way.

Use of Canvas System for this course:

The Heinz School uses Carnegie Mellon University's Canvas system to facilitate distance learning as well as to enhance main campus courses. In this course, we will use the Canvas system generally to post lecture materials, related documents and to receive assignments electronically from students.

Take care of yourself:

Do your best to maintain a healthy lifestyle this semester by eating well, exercising, avoiding drugs and alcohol, getting enough sleep and taking some time to relax. This will help you achieve your goals and cope with stress.

All of us benefit from support during times of struggle. You are not alone. There are many helpful resources on campus and an important part of the college experience is learning how to ask for help. Asking for support sooner than later is often helpful. If you or anyone you know experiences any academic stress, difficult life events, or mental health issues like anxiety or depression, we strongly encourage you to seek support. Counseling and Psychological Services is here to help: call 412-268-2922 and visit their website at <http://www.cmu.edu/counseling/>. Consider talking to a friend, faculty or family member you trust for help getting connected to the support that can help.




If you or someone you know is feeling suicidal or in danger of self-harm, call someone immediately, dial 911, or contact:

- CaPS: 412-268-2922
- Re:solve Crisis Network: 888-796-8226
- If the situation is life threatening, call the police:
 - On campus: CMU Police: 412-268-2323
 - Off campus: 911

If you have questions about this or your coursework, please let me know.

[Student Academic Success Center \(SASC\) \(https://www.cmu.edu/student-success/\)](https://www.cmu.edu/student-success/)









SASC focuses on creating spaces for students to engage in their coursework and approach learning of group and individual options. We offer many opportunities for students to deepen their understanding as learners, communicators, and scholars. Our services and [workshops \(https://www.cmu.edu/student-success/programs/workshops/index.html\)](https://www.cmu.edu/student-success/programs/workshops/index.html) are free to the CMU community and meet the needs of all levels of study. SASC programs to support student learning include the following (program titles link to

- [Academic Coaching \(https://www.cmu.edu/student-success/programs/coaching.html\)](https://www.cmu.edu/student-success/programs/coaching.html)--This program offers holistic, one-on-one peer support and group workshops to help undergraduate and graduate students develop good study habits for success. Academic Coaching assists students with time management, productive learning habits, organization, stress management, and other skills. Request an initial consultation [here](https://docs.google.com/forms/d/e/1FAIpQLSfMANCWkyPdXRb0zOsMar7nzpUau8hqN_gIFm3OISY5/)  (https://docs.google.com/forms/d/e/1FAIpQLSfMANCWkyPdXRb0zOsMar7nzpUau8hqN_gIFm3OISY5/)
- [Peer Tutoring \(https://www.cmu.edu/student-success/programs/tutoring.html\)](https://www.cmu.edu/student-success/programs/tutoring.html)--Peer Tutoring is offered in several formats for students seeking support related to their coursework. Drop-In tutoring targets our high-level courses through regularly scheduled open tutoring sessions during the fall and spring semesters. A drop-in appointment consists of ongoing individualized and small group sessions. You can utilize tutoring to review related content, clarify and ask questions, and work through practice problems. Visit the [webpage \(https://www.cmu.edu/student-success/programs/tutoring.html\)](https://www.cmu.edu/student-success/programs/tutoring.html) (<https://www.cmu.edu/student-success/programs/tutoring.html>) to see courses currently being supported by Peer Tutoring.
- [Communication Support \(https://www.cmu.edu/student-success/programs/communication-support/\)](https://www.cmu.edu/student-success/programs/communication-support/) Communication Support offers free one-on-one communication consulting as well as group workshops for strong written, oral, and visual communication in texts including IMRaD and thesis-driven essays, reports, oral presentations, posters and visual design, advanced research, application materials, grant proposals, business and public policy documents, data visualisation, and team projects. Appointments are available for undergraduate and graduate students from any discipline at CMU. Schedule an [appointment \(https://www.cmu.edu/student-success/programs/communication-support/make-an-appointment.html\)](https://www.cmu.edu/student-success/programs/communication-support/make-an-appointment.html) (video), attend a [workshop \(https://www.cmu.edu/student-success/calendar.html\)](https://www.cmu.edu/student-success/calendar.html), or consult [handouts \(https://www.cmu.edu/student-success/other-resources/index.html\)](https://www.cmu.edu/student-success/other-resources/index.html) to strengthen communication skills. [Resources \(https://docs.google.com/document/d/1_0K64z6Auu_bse6wmst5xamYbnrk9Ymd2QgMusp=sharing/\)](https://docs.google.com/document/d/1_0K64z6Auu_bse6wmst5xamYbnrk9Ymd2QgMusp=sharing/) for multilingual students are also available.
- [Language and Cross-Cultural Support \(https://www.cmu.edu/student-success/programs/language-support/index.html\)](https://www.cmu.edu/student-success/programs/language-support/index.html)--This program supports students seeking help with language and cross-cultural academic and professional success through individual and group sessions. Students can get assistance with academic emails, learning expectations and strategies for clear academic writing, pronunciation, and more. [Make an appointment \(https://docs.google.com/forms/d/e/1FAIpQLSfMANCWkyPdXRb0zOsMar7nzpUau8hqN_gIFm3OISY5/\)](https://docs.google.com/forms/d/e/1FAIpQLSfMANCWkyPdXRb0zOsMar7nzpUau8hqN_gIFm3OISY5/)  (https://docs.google.com/forms/d/e/1FAIpQLSfMANCWkyPdXRb0zOsMar7nzpUau8hqN_gIFm3OISY5/) [appointment \(https://docs.google.com/forms/d/e/1FAIpQLSfMANCWkyPdXRb0zOsMar7nzpUau8hqN_gIFm3OISY5/\)](https://docs.google.com/forms/d/e/1FAIpQLSfMANCWkyPdXRb0zOsMar7nzpUau8hqN_gIFm3OISY5/)  (https://docs.google.com/forms/d/e/1FAIpQLSfMANCWkyPdXRb0zOsMar7nzpUau8hqN_gIFm3OISY5/) with a Language Development Specialist to get individualized coaching.
- [Supplemental Instruction \(https://www.cmu.edu/student-success/programs/supp-inst.html\) \(SI\)](https://www.cmu.edu/student-success/programs/supp-inst.html)--This is a non-remedial approach to learning in historically difficult courses at CMU. It utilizes a peer-led group approach to help students succeed and is facilitated by an SI leader, a CMU student who has successfully completed the course. SI offers a way to connect with other students studying the same course, a weekly study time that reinforces learning and retention of information, as well as a place to learn

study tools and exam techniques specific to a course. Visit the website to see courses with SI av:
<https://www.cmu.edu/student-success/programs/supp-inst.html>).

Course Summary:

Date	Details	Due
Sat Jan 28, 2023	 Quiz 1: Python Fundamentals - Requires Respondus LockDown Browser + Webcam https://canvas.cmu.edu/courses/43564/assignments/754403	due by 11:59pm
	 Homework 3 https://canvas.cmu.edu/courses/43564/assignments/754406	due by 11:59pm
Mon Feb 6, 2023	 Project Draft -- Pitch Deck https://canvas.cmu.edu/courses/43564/assignments/754410	due by 11:59pm
	 Project Draft -- Project Board https://canvas.cmu.edu/courses/43564/assignments/754411	due by 11:59pm
	 Project Draft - Project Prototype https://canvas.cmu.edu/courses/43564/assignments/754409	due by 11:59pm
Sat Feb 11, 2023	 Quiz 2: list, tuple, set, dict, conversions, comprehensions, user input, exceptions, functions, and modules - Requires Respondus LockDown Browser + Webcam https://canvas.cmu.edu/courses/43564/assignments/754402	due by 11:59pm
Mon Feb 13, 2023	 Homework 4 https://canvas.cmu.edu/courses/43564/assignments/754407	due by 11:59pm
Mon Feb 20, 2023	 Homework 5 https://canvas.cmu.edu/courses/43564/assignments/754408	due by 11:59pm
Sun Feb 26, 2023	 Quiz 3: NumPy, Pandas, and Regular Expressions - Requires Respondus LockDown Browser + Webcam https://canvas.cmu.edu/courses/43564/assignments/754401	due by 11:59pm
Thu Mar 2, 2023	 Project Final - Presentation Deck	due by 11:59pm

Date	Details	Due
	https://canvas.cmu.edu/courses/43564/assignments/754413	
	 Project Final - Project Board https://canvas.cmu.edu/courses/43564/assignments/754414	due by 11:59pm
	 Project Final - Source Code https://canvas.cmu.edu/courses/43564/assignments/754415	due by 11:59pm
Sat Mar 4, 2023	 Project Final - In-Class Presentations https://canvas.cmu.edu/courses/43564/assignments/754412	due by 11:59pm
Tue Sep 3, 2024	 Homework 1 https://canvas.cmu.edu/courses/43564/assignments/754404	due by 11:59pm
Mon Sep 9, 2024	 Homework 2 https://canvas.cmu.edu/courses/43564/assignments/754405	due by 11:59pm
	 Quiz 1 Letter Grade https://canvas.cmu.edu/courses/43564/assignments/754416	
	 Quiz 2 Letter Grade https://canvas.cmu.edu/courses/43564/assignments/754417	
	 Quiz 3 Letter Grade https://canvas.cmu.edu/courses/43564/assignments/754418	