



Course Syllabus

 Edit

DATA 3500

Introduction to Python for Data Analytics

Syllabus

Instructor

Professor Chelsea Harding

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Office: EBB 702

Office Hours: Tuesday 2 - 3:00 pm (let me know if you need to meet via zoom!)

TAs

Hope Johnson

Email: A02358899@usu.edu (<mailto:A02358899@usu.edu>)

Office Hours: By appointment

Owen Mendiola

Email:

Office Hours: By appointment

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Office Hours: By appointment

Communication

Please sign up to receive an email when I post an announcement to the Canvas system.

You can contact me anytime. Please keep in mind, I may not reply until normal business hours. But I might reply right back if I can, so you are welcome to contact me anytime.



Please message me through Slack. Email is fine too, but avoid sending me Canvas messages. I don't read them.



Course Description

This course is designed to gain experience with Python programming, and teach the following programming concepts: data types, variable assignment, if/conditional statements, looping structures, function declaration and function calls, Python Lists and Dictionaries. Assignments in this course will provide experience with: Input/Output with large data sets, Data extraction from the Web using JSON and Python Dictionaries, introduction to prediction and decision making with data in Python.

Textbook

Intro to Python for Computer Science and Data Science

Learning to Program with AI, Big Data and The Cloud (Subscription)

By: Paul Deitel; Harvey Deitel

- Publisher: Pearson
- Print ISBN: 9780135404676, 0135404673
- Print ISBN: 9780135404676, 0135404673
- eText ISBN: 9780135404812, 0135404819

It has come to my attention that you can access the textbook FOR FREE via USU Library access. To do this go to:

<https://www.oreilly.com/library-access/>  [\(https://www.oreilly.com/library-access/\)](https://www.oreilly.com/library-access/)

Select "Get instant access through your library" -> select your institution -> select "Not listed, click here."
-> sign in with your USU email.

If you have issues with this, let me know. I would love it, if everyone could access this book for free.

Full Topic List:

History of Python, Comments, Style, Errors

Elementary Programming, Algorithms, Code, Pseudocode



Variables, Input, Data Types, Identifiers, Assignment



Constants, Numeric Data Types, Literals, Operators,

Operator Precedence, Scope, Scientific Notation, Type Conversion, Augmented Operators, Rounding

Software Development Process, Functions

Functions, Modules

Strings, CharactersASCII, Unicode, Escape Sequences

if, if-else, nested-if, if-else-if, Booleans

Conditional Expressions, Operator Precedence, While Loops

For loops, range, nested loops, break, continue

Functions, Formal/Actual parameters, Stack, Heap, Return values, Void functions, Positional & keyword parameters

Variable, Pass by value, Modularizing code, Default Arguments, returning multiple values

Creating Strings, Immutability and Interning, Functions on Strings, Operators, Comparing, Iterating a String, Testing, Searching


Converting Strings, Stripping Whitespace, Operator Overloading (Dunders)

Create Lists, List Methods, Python Dictionaries, Key/Value Pair

More List and Dictionaries, Sequence Type, Index Operator, Traversing Lists, Split

Copying Lists, List as Parameter, List to Keep Count, Intro to Search & Sort

Linear Search, Binary Search, Selection Sort

 idimensional Lists, Creation, Assigning Values, Accessing



Ragged/Jagged Lists (multidimensional lists with varying length lists), Large Dimension Lists

Python Dictionary, Key/Value Pair, Inserting/Editing/Deleting Dictionary Values

Python Dictionary to JSON conversion. Web data retrieval via JSON

Content Videos

There will be short videos provided on Canvas each week, going through the material in the book. Make sure you watch them and are familiar with the content.

Zoom Sessions/Recordings

Generally, there will be two lectures a week. In these lectures we will go over the material in the content videos (quickly, because you should have already watched the content videos), and then we will have programming activities to reinforce knowledge, and practice coding skills.

The Zoom sessions will be recorded, so if you cannot attend live, no problem. You can watch the zoom sessions later. However, please actually try to do the programming activities yourself. Don't just watch the programming activities - try them.


Assignments

The following assignments will provide experience with Data Analytics in Python:

Input/Output with large data sets

Data extraction from the Web using JSON and Python Dictionaries

Introduction to prediction and decision making with data in Python.

 There will be an assignment due approximately every other week.

AWS



Amazon Web Services allows you to write and run code for all types of applications. You can access AWS through any web browser at <https://console.aws.amazon.com/> . You must share your workspace with the instructor and the TA, but no other students. You should share everything in your brain with your fellow students, regarding programming, but **please do not share your code**. Meaning, I encourage you to talk about the assignments and brainstorm ideas to solve them, but do not share your code. Every keystroke of every assignment should be written by your own hands.

Using ChatGPT as a Learning Aid


ChatGPT is an incredibly valuable tool for learning, and we will use it extensively in this course. However, it's important to note that while ChatGPT can provide assistance and generate code snippets, you are expected to write your own code from scratch.

- ChatGPT will be utilized for:
 - Answering questions and clarifying concepts.
 - Providing code examples and explanations.
 - Assisting with debugging and problem-solving.
 - Generating ideas and suggestions for projects.
- Encouragement for independent learning:
 - You are encouraged to use ChatGPT as a resource, but not as a crutch.
 - It's perfectly fine to seek guidance and clarification, but copying and pasting code from ChatGPT without understanding is plagiarism, and it will not be tolerated. All code submitted must be the student's original work.

Laptop/Desktop

Since we are using AWS to write our Python programs, with a web browser, you can use any type of laptop or desktop you want. Chromebooks are fine, and tablets are ok too. As long as they have a good web browser like Chrome, Edge, Safari, etc.

Exams

There will be a mid-term exam available starting Wednesday of week 8. The mid-term will be open  hgh Friday, and you are expected to take it before midnight on that day. If you run into technical errors, DO NOT WAIT to contact me. The longer you wait to get help, the less I can be of help to you.

Extra Help



The reason I love teaching this material is because this is real, rubber-meets-the-road, skills that you are learning. These skills will boost your resume and get you an awesome job and career. If you ever feel behind or you don't understand the material, even after watching the content videos and participating in the programming activities, please contact me. I love working with students, and I'm here to help you become a great programmer.

Grading

The grades will be calculated as follows:

Requirement	Percentage of Grade
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Homework	50%
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Midterm Exam	20%
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Final Project	30%
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Total	100%
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A 93% C+ 77%

A- 90% C 73%

B+ 87% C- 70%

B 83% D+ 66%

B- 80% D 60%

Assignments

Assignments are due at 11:59PM of the due date. The official clock is the Canvas system. Thus, if Canvas says it is late, then it is late. You can turn in assignments up to one day late with a penalty of



of points possible.

You are given one free pass where you are able to turn in an assignment up to two days late without penalty. This will occur automatically on the first assignment you turn in late. Use this wisely. If you turn in an assignment late and do poorly you will get 100% of the poor score. If you turn in a second assignment late and do great, you will get 75% of that great score (if the assignment is 1 day late).


The final assignment will not be accepted late, even if you turned in all previous assignments in on-time.

Academic Calendar

The start and end dates of the semester, as well as add/drop/withdraw dates, will follow the University calendars. The academic, registration, and final exam schedule calendars can be found here:

<http://www.usu.edu/calendar/academic>  (<http://www.usu.edu/calendar/academic>).


Academic Freedom and Professional Responsibilities

Academic freedom is the right to teach, study, discuss, investigate, discover, create, and publish freely. Academic freedom protects the rights of faculty members in teaching and of students in learning. Freedom in research is fundamental to the advancement of truth. Faculty members are entitled to full freedom in teaching, research, and creative activities, subject to the limitations imposed by professional responsibility. [USU Policy 403](http://www.usu.edu/hr/files/uploads/Policies/403.pdf)  (<http://www.usu.edu/hr/files/uploads/Policies/403.pdf>) further defines academic freedom and professional responsibilities.

Academic Integrity - "The Honor System"

Each student has the right and duty to pursue his or her academic experience free of dishonesty. The Honor System is designed to establish the honest conduct expected and required of all Utah State University students.


To enhance the learning environment at Utah State University and develop student academic integrity, each student agrees to the following Honor Pledge: "I pledge, on my honor, to conduct myself with the foremost level of academic integrity." A student who lives by the Honor Pledge is a student who does more than not cheat, falsify, or plagiarize. A student who lives by the Honor Pledge:

- espouses academic integrity as an underlying and essential principle of the Utah State University community,
-  understands that each act of academic dishonesty devalues every degree that is awarded by this institution, and
- is a welcomed and valued member of Utah State University.



You are not allowed to copy/paste code from another source and turn it in as your own work. Any exceptions to this rule will be clarified by the instructor. An example of an exception might be: "I am ok with you using this website as a resource to do your homework, but you must cite it." You are never allowed to copy/paste code from another student.

Grievance Process

Students who feel they have been unfairly treated [in matters other than discipline, admission, residency, employment, traffic, and parking - which are addressed by procedures separate and independent from the Student Code] may file a grievance through the channels and procedures described in the Student Code: [Article VII Grievances](https://studentconduct.usu.edu/studentcode/article7)  (<https://studentconduct.usu.edu/studentcode/article7>)

Sexual Harassment


Sexual harassment is defined by the Affirmative Action/Equal Employment Opportunity Commission as any "unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature." If you feel you are a victim of sexual harassment, you may talk to or file a complaint with the Affirmative Action/Equal Employment Opportunity Office located in Old Main, Room 161, or call the AA/EEO Office at (435) 797-1266.

Students with Disabilities

The Americans with Disabilities Act states: "Reasonable accommodation will be provided for all persons with disabilities in order to ensure equal participation within the program." If a student has a disability that will likely require some accommodation by the instructor, the student must contact the instructor and document the disability through the Disability Resource Center (435) 797-2444, preferably during the first week of the course. Any request for special consideration related to attendance, pedagogy, taking of examinations, etc., must be discussed with and approved by the instructor. In cooperation with the Disability Resource Center, course materials will be provided in alternative format (e.g. large print, audio, diskette, or Braille) upon request.

Withdrawal Policy and "I" Grade Policy


Students are required to complete all courses for which they are registered by the end of the semester.

 In some cases, a student may be unable to complete all of the coursework because of extenuating circumstances not due to poor performance or to retain financial aid. The term 'extenuating' circumstances includes: (1) incapacitating illness which prevents a student from attending classes for a

minimum period of two weeks, (2) a death in the immediate family, (3) financial responsibilities requiring a student to alter a work schedule to secure employment, (4) change in work schedule as required by an employer, or (5) other emergencies deemed appropriate by the instructor.

Course Summary:

Date	Details	Due
Fri Jan 12, 2024	 HW1 - Share Cloud9 Info https://usu.instructure.com/courses/746828/assignments/4284864	due by 11:59pm
	 Join Slack https://usu.instructure.com/courses/746828/assignments/4288120	due by 11:59pm
Fri Feb 2, 2024	 HW2 - Variables, Math, Output https://usu.instructure.com/courses/746828/assignments/4284865	due by 11:59pm
Fri Feb 16, 2024	 HW3 - If statements, Loops, Logic https://usu.instructure.com/courses/746828/assignments/4284866	due by 11:59pm
Fri Mar 1, 2024	 Mid-Semester Check In https://usu.instructure.com/courses/746828/assignments/4284861	due by 11:59pm
	 Midterm Exam (Remotely Proctored) https://usu.instructure.com/courses/746828/assignments/4284855	due by 11:59pm
Fri Mar 22, 2024	 HW4 - Stock Market Trading https://usu.instructure.com/courses/746828/assignments/4284867	due by 11:59pm
Fri Apr 5, 2024	 HW5 - Stock Market Trading Simulations https://usu.instructure.com/courses/746828/assignments/4284868	due by 11:59pm
Wed Apr 17, 2024	 IDEA Survey - 3 Bonus Points https://usu.instructure.com/courses/746828/assignments/4284869	due by 11:59pm
Apr 26, 2024	 Final Project https://usu.instructure.com/courses/746828/assignments/4284863	due by 11:59pm
	 Final Project Presentation	

Date	Details
	https://usu.instructure.com/courses/746828/assignments/4284870
	 Practice Quiz (Remotely Proctored) https://usu.instructure.com/courses/746828/assignments/4284854

