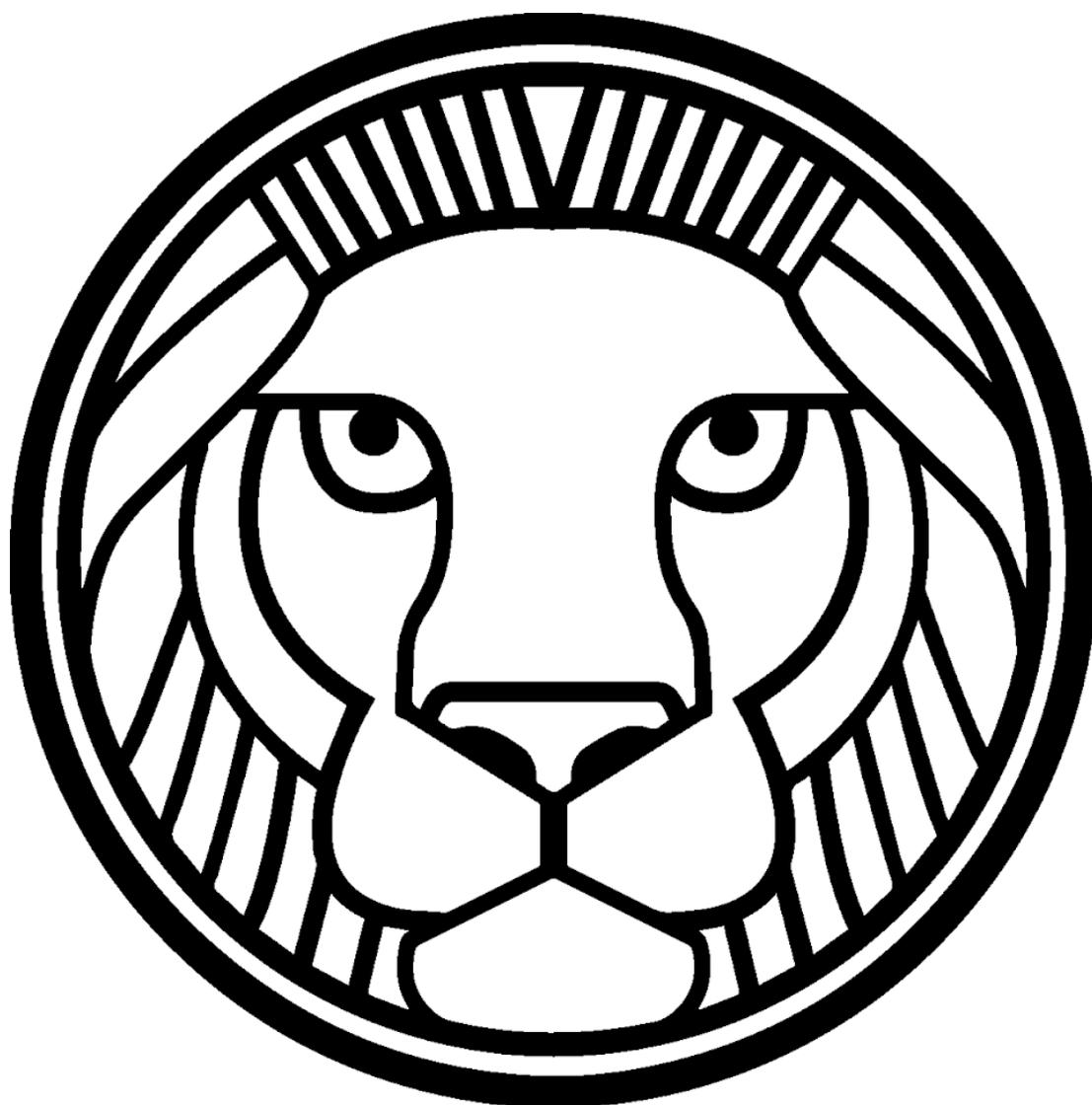


SI 507 | Intermediate Programming | Fall 2024



— L E O —

LECTURERS' UNION

AFT-MI LOCAL 6244

**THIS COURSE IS TAUGHT BY
A LEO LECTURER**

Course Description

SI 507 is an intermediate python programming course that is designed to consolidate the concepts you learned in SI 506 and provide you the experience and knowledge to excel in the higher-level data science courses at UMSI. This course will focus on developing your ability to modify, troubleshoot and build complex programs, while also introducing complex tools and libraries that will allow you to work with a variety of data sources and types. Finally this course will develop the skills and practices you'll need for collaboration on technological/programming projects. This course relies on prior knowledge of the basics of programming that were taught in the prerequisite SI 506.

More specifically, students completing this course will have developed the following competencies (C):

- C: Able to devise and implement computational solutions to common problems encountered in data analysis
- C: Able to write clean, readable, modular, well-documented Python code
- C: Able to describe and implement basic data structures and algorithms and apply them to appropriate problems
- C: Able to debug and troubleshoot programming problems by applying debugging techniques, searching for and learning from online resources, and engaging with fellow programmers on- and offline.
- C: Able to create, maintain, and use a Python development environment, including python distributions, code editors, third-party libraries, and virtual environments.
- C: Able to access and work with data from multiple sources (e.g. files and Web APIs) and in multiple formats (e.g., text, csv, and JSON)

More specific learning goals are listed for each of the weekly topics below.

Note: Problem solving, debugging, and clean coding will be integrated throughout the course. In addition to explicit coverage of debugging techniques, pseudocode, and the application of particular algorithms to types of problems, there will be problems and examples in lectures and homeworks that focus on problem solving and debugging. There will also be an expectation that students learn and apply good code writing practices on their own, by referring to the PEP8 standard.

Course Format - All lectures will be offered in person but will be accessible asynchronously via Zoom recordings. Labs will be synchronous

Teaching Team

Instructors:

Bobby Madamanchi, UMSI Lecturer IV, amadaman@umich.edu

Lecture: Tuesday 1 - 4:00 PM

Location: 1020 SPH2

*Recordings will be available for asynchronous participation.

Individual Office Hours:

Bobby Madamanci

Thursday 9-5

(<https://calendly.com/amadaman/umsi-office-hours>)

Also, available by request outside of OH

Drop-in Group Office Hours Thursday 4:15pm - 6:15pm

<https://umich.zoom.us/j/96018816381>

password:si507

These weekly office hours are the best option for unstructured help on homework and projects (discrete/specific questions can be asked and answered through slack). Ideally this will also be a time for peer-to-peer learning. Studies show that working on homework & projects in a social environment has benefits for both advanced students and struggling students. Office hours are *NOT* recorded.

GSI:Jinkui Chi, MSI Student, chijk@umich.edu

Labs: T 6:00 - 7:00 PM | (NQ 1185, sec003,sec103), Th 7:00 - 8:00 PM | (NQ2255,sec002,102)

Individual Office Hours: Wednesday 5:00 - 6:00 PM Remote

Please set up an appointment at <https://calendly.com/chijk/si-507-gsi>

GSI: Yanzhou Cao, MSI Student, yanzhuo@umich.edu

Labs: Tu 6:00-7:00 PM(MLB B124, sec004,104), Th 6:00-7:00 PM(NQ 2255,sec005,105)

Individual Office Hours: Tuesday 7:00-8:00 PM Remote

Please set up an appointment at <https://calendly.com/yanzhuo/507oh>

Note: Email is a last resort communication mechanism - see below.

Individual office hours will be available by appointment. Unbooked appointment slots are available on a first-come, first-served basis. If you wish to meet with a member of the teaching team but can't make any of the office hour slots, contact the relevant instructor(s) directly by email to try to find another time. Be forewarned that we are all very busy, though, and it would be much, much better if you could make it to the scheduled office hours!

[Attendance & Flexible Deadline Assignment/Project Submission Policy.](#)

I have a goal of balancing accessibility, flexibility and a vibrant learning environment. Attendance at all lectures & labs is strongly encouraged (there is significant evidence that synchronous attendance is correlated with growth in programming skills) but I understand that not everyone can always make all classes. Similarly, consistent work on HW & Projects is the best way to grow as a programmer, but the precarity and stress that so many students experience make hard deadlines a stressful challenge for many students.

To balance all of these concerns I am experimenting with a combination attendance/flexible deadline policy. Attendance at all lectures and discussion sections is strongly recommended but ultimately optional. However, attendance in Lecture will be taken. To incentivize attendance,

Web Data	<ul style="list-style-type: none">• C: understanding web APIs using docs• C: reverse engineering web API results by inspecting JSON• L: Obtaining and using App tokens to access web APIs• A: Awareness of OAuth and authentication for Web APIs
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Communication

Piazza The preferred channel for communicating about course content is the SI 507 Piazza.

You can join the piazza here: <https://piazza.com/umich/winter2024/intermediateprogramming>

Additionally, this will be the primary channel for asking questions about homework & project assignments (both content-based and logistical). We will have a thread for each homework assignment so that points of confusion can be addressed once for everyone. If you have questions, it's virtually certain that others do too, and the entire community benefits from seeing both the questions and answers. Moreover, you will often get answers more quickly from your fellow students than from the teaching team.

- It is not appropriate to post entire homework codes to ask a question - isolate the relevant section
- It is not appropriate to answer questions about homework by posting the complete answer.

Grading Questions and Concerns

For questions or concerns about grades/scores ("when will my Project 2 be graded?" "I think I got an incorrect score on problem 3", etc), please **submit your concern** via <https://forms.gle/bmbgUcmrBHN1QgVw8>

Those concerns will be addressed typically at the end of the unit - however preparing the learning experience will always take precedence over administrative concerns.

General questions, desire for explanations, etc, please redirect to Piazza, and try to attend a meeting of group office hours!

For administrative questions, e.g. questions about extensions or personal circumstances please email me directly at amadaman@umich.edu

Please do not ask an individual instructor about changing your grade(s). We make grading decisions as a team to ensure that everyone's grades are addressed in the same way.

Canvas

General announcements about course scheduling changes, clarifications, important upcoming events, etc., will occur via Canvas Announcements. You should make sure your Canvas settings are set up so that you *will* receive email from Canvas Announcements. **You will be expected to have received information sent in Canvas Announcements.** (The default Canvas settings will have you getting that email, but if you turned Canvas emails off, make sure you turn 'em back on or ask someone to figure out how to do so.)

All assignments, including DYUs, homeworks, and projects will be available on the Canvas site. All grades will be available on the Canvas site. We will try our best to grade assignments as quickly as possible.

Resources

All you need to participate in this course is access to an Internet-connected computer. You will be expected to bring a laptop to lectures and discussion sections. If you do not have a laptop to use in class (whether because you have a desktop computer OR because you use University computers for your coursework), please let your GSI and/or Prof. Madamanchi know by the end of the first week of class so we can make sure you have the same participation options.

There is no textbook for this course. All required material will be provided in the course Lecture Notes and discussed in Lectures. Many Lecture Notes will offer links to additional resources to learn more about the concepts discussed. You will not be tested on anything found in such resources, but you may find them useful for completing homeworks and projects. If you find you need a refresher on more foundational Python and programming concepts, we recommend the online textbook, [Programs, Information, and People: Python 3](https://www.programsinformationpeople.org/runestone/static/publicpy3/), written by Paul Resnick, with additions by Jaclyn Cohen, Stephen Oney, Samuel Carton, and Lauren Murphy.

<https://www.programsinformationpeople.org/runestone/static/publicpy3/>

Note that this course will be conducted in **Python 3**, not Python 2.

Assignments and Grading

****** NOTE YOU MUST COMPLETE ALL PROJECTS & HOMEWORKS TO RECEIVE AN A IN THE COURSE.**

Component	% of grade
Homeworks (8) <i>Lowest 2 scores by percentage will be dropped</i>	50%
Projects (3) <i>Lowest project score by percentage will be dropped</i>	30%

Final Project Proposal (20% of project grade) Data Checkpoint (20% of project grade) Demo & Documentation (60% of project grade) <i>No components will be dropped.</i>	20%
Total	100%

****** NOTE YOU MUST COMPLETE ALL PROJECTS & HOMEWORKS TO RECEIVE AN A IN THE COURSE.**

Homeworks (8)

There will be weekly labs/homeworks.

Homeworks assigned in a given Monday lecture will have a **suggested** submission date at 5pm on Monday two weeks after the assigned date

The homeworks are intended to give you hands-on experience with the concepts presented in class. Generally you will start working on homeworks during discussion section and finish them outside of class meetings. It's a very good idea to attend discussion section and start working on the assignments so that you can ask clarification questions of your GSI. You can, of course, submit homeworks if you don't attend discussion section.

Extra Credit

Many homeworks will come with an "extra credit" option. The EC options, when available are to challenge students for whom the HW is too simple. **We do not provide help with the EC problems.**

Projects (3)

There will be 3 projects over the course of the semester not including the final project. Each will take significant effort to complete, so you are encouraged to start early. Instructions for each project will be released at least 2 weeks before the deadline. None of the projects are easy to do in one night if you have just learned these concepts, and some are impossible to do in that short period of time. You are allowed to drop 1 project for the calculation of your final grade but you will no longer be eligible for an A

Final Project

There will be a final project in this course that you get significant time to work on and build up to, using a number of the concepts we'll address in the course. The Final Project will actually consist of multiple graded components that are due across several weeks, including a proposal, checkpoint, and final deliverable. There will be structure and requirements, but within that structure you will be able to exercise some creativity to select the subject matter and form for your final project.

Letter Grades

Your final *letter* grade in the course will be based on the percentage of the total points available that you earn.

I do not give A+ unless your final project is extraordinary.

A	94-100%
A-	90-93.99%
B+	87-89.99%
B	83-86.99%
B-	80-82.99%
C+	77-79.99%
C	73-76.99%
C-	70-72.99%
D+	67-69.99%
D	63-66.99%
D-	60-62.99%
E/F	0-59.99%

The cutoffs between letter grades are hard cutoffs. Even if you missed a cutoff by a few tenths of a percentage point, please do not ask to be bumped up a level. If you feel you have been graded unfairly on a particular assignment, you may submit a regrade request, following the process described in “Communication.”

Excused Absences

Religious holidays you observe that do not accord with the university's holiday schedule ARE, per university policy, always excused absences. If a holiday will take you away from class (a class meeting), please speak with your GSI in advance, to find a time to make up for any content you miss. We will work with you to arrange an alternative, e.g. going to a different discussion section than usual.

For other accommodations you need to take this course, please see the section on **Accommodations and Services for Students**.

Academic Integrity & Collaboration

All assignments in this course must be turned in individually. However, we strongly encourage helping one another, asking and answering questions, and walking through your thought processes.

The restrictions on that are as follows:

- If you get help from someone for writing your code, cite that specifically in your submission (in a comment in your program). You do not need to cite learning from lecture or section, or from your textbook(s) or instructors (unless you are citing collaboration with another student that occurs during lecture or section!). If you use another person's code directly, in class or from the internet, you must also cite that in a comment to your code indicating what you borrowed, and where/who from. In such a case you should check with your GSI or Prof. Madamanchi to make sure that any code “borrowing” is acceptable (it usually isn’t).
- If you give help to someone else, or work with others on HW, etc, *do not type on their computer*. Talk, draw, and write with pen/pencil/marker as much as you like, but everyone should get the experience of typing and completing problems in the way they normally do (e.g. it's not okay for a friend in the class to type your HW for you while you watch because they know how to do it already, nor for you to ask for someone's computer to just finish a problem because it's frustrating not knowing how to communicate what you're thinking about code. The challenge is worth it!).
- Posting small code snippets (generally 4 lines or less) on Slack is great, and encouraged! Posting complete answers to HW problems is not acceptable.
- Study groups are welcomed and strongly encouraged, as is talking through any problems you encounter. However, if you feel you are either giving or receiving all of/too many of the answers, it is probably time to break up the study group. Please contact Prof. Madamanchi and/or your GSI confidentially if you have a problem like this and are having difficulty dealing with it on your own.
- Using answers provided directly from past semesters, if they are the same or similar to work this semester, is not acceptable. To use any past assignments from others as reference for your own is a serious breach of academic honesty and may result in serious consequences. Copying others' answers is very different from *hearing an explanation* from a fellow student or a past student, even if the explanation involves walking through little bits of code.

Any statements or phrases from the work of others, including code snippets, must be clearly identified as quotations, and proper citation must be provided. Unless otherwise specified, all submitted work must be your own, original work.

The format for citing code is as follows:

<author(s) names> (<date>) <title of program/source code> (<code version>) [<type>]. Web address or publisher.

E.g.

Smith, J (2011) GraphicsDrawer source code (Version 2.0) [Source code].
<http://www.graphicsdrawer.com>

However, for citing fellow classmates' code, it's OK to say in your assignment, in a code comment, e.g.

I worked on this code lines 10-15 with Jane Doe.

In such a case, Jane should also comment her assignment about you! (You do not need to cite working with a GSI or IA or Prof. Madamanchi.)

Any violation of the School's policy on Academic and Professional Integrity (stated in the Master's and Doctoral Student Handbooks) will result in serious penalties, which might range from failing an assignment, to failing a course, to being expelled from the program. Violations of academic and professional integrity will be reported to UMSI Student Affairs. Consequences impacting assignment or course grades are determined by the faculty instructor; additional sanctions may be imposed by a school administrator.

Accommodations and Services for Students

If you need or believe you may need an accommodation, e.g. for a disability, please let the instructors know at your earliest convenience. Some aspects of this course, the assignments, the in-class activities, and the way we teach may be modified to facilitate your participation and progress. As soon as you make us aware of your needs, we can work with the Office of Services for Students with Disabilities (SSD Office) to help us determine appropriate accommodations. SSD (734-763-3000; <http://ssd.umich.edu/>) typically recommends accommodations through a Verified Individualized Services and Accommodations (VISA) form. We will treat any information that you provide in as confidential a manner as possible.

Please make sure Prof. Madamanchi receives all notification about accommodations (e.g. test accommodations), and that your GSI receives all relevant information for your section.

If you have a concern along with or separate from the above that affects the process of class at large or for you, please approach or contact Prof. Madamanchi confidentially. I will also treat any such shared information in as confidential a manner as possible and will do what I can to ensure you have what you need in this course and/or have the resources to find it.

Mental Health and Well-Being at the University of Michigan

The University of Michigan is committed to advancing the mental health and well-being of its students, while acknowledging that a variety of issues, such as strained relationships, increased anxiety, alcohol/drug problems, and depression, directly impacts students' academic performance. We take this seriously.

If you or someone you know is feeling overwhelmed, depressed, and/or in need of support, services are available. For help, contact Counseling and Psychological Services (CAPS) at (734) 764-8312 and <https://caps.umich.edu/> during and after hours, on weekends and holidays or through its counselors physically located in schools on both North and Central Campus. You may also consult University Health Service (UHS) at (732) 764-8320 and <https://www.uhs.umich.edu/mentalhealthsvcs>, or for alcohol or drug concerns, see www.uhs.umich.edu/aodresources. For a more comprehensive listing of the broad range of mental health services available on campus, please visit: <http://umich.edu/~mhealth/>

If you are seeking advice, answers to questions, or help accessing resources, you should contact the Student Services Office within UMSI, on the 3rd floor of the North Quad Academic Building. You can also contact them for support with academic or personal advising while in the program.