SI 507 | Intermediate Programming | Fall 2020

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 programming courses at UMSI. This course will focus on developing your ability to modify, troubleshoot and build complex courses, 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 be able to

- Demonstrate proficiency in a number of complex Python and general programming skills
  - Effective use of functions, classes, and modules to organize large, complex programs
  - Accessing diverse web APIs using OAuth and caching
  - Web scraping using Beautiful Soup
  - Accessing databases using SQL
  - Using Flask to create web applications*
- Design, write, and debug complex Python programs (using multiple libraries, and files, > 800 lines of code)
- Use git and GitHub to maintain an evolving codebase, and collaborate with others on a team-based programming project

Course Format - All course activities will be remote (via zoom) until further notice. Lectures will be a combination of both synchronous (zoom) and asynchronous (recordings). Labs will be synchronous.

Teaching Team

Lead Instructor: Bobby Madamanchi, UMSI Lecturer III, amadaman@umich.edu
Lecture when synchronous: Tuesdays 8:30 - 11:30 AM (Zoom)

Individual Office Hours: Tuesday 1-3 pm
(https://calendly.com/amadaman/si-507-office-hours)

GSI: Jonathan Martindale, MHI Student, martijal@umich.edu
Lab Section 002: Tuesdays 4-5:30 PM (Zoom)
Lab Section 005: Wednesday 1-2:30 PM (Zoom)

Individual Office Hours: Tuesdays 2-3:30 PM
(https://calendly.com/martijal/si-507-individual-office-hours)

Group Office Hours: Thursdays 11 AM-12:30 PM
(https://umich-health.zoom.us/j/97718991678)

GSI: Ashwin Malik, MSI Student, ashwinmk@umich.edu
Lab Section 003: Wednesday 10-11:30 AM (Zoom)
Lab Section 004: Monday 1-2:30 PM (Zoom)

Individual Office Hours: Thursday 2:30-4 PM
(https://calendly.com/ashwinmk/si-507-individual-office-hours)

Group Office Hours: Mondays 10-11:30 AM
Note: Email is a last resort communication mechanism - see below.

**Group office hours** will be held weekly. This is 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.

**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 office hours!

**Communication**

**Slack** The preferred channel for course communications is the SI 507 Slack Account. You can join the slack here:
https://join.slack.com/t/umich-s6h8901/shared_invite/zt-gwpgwqvm-myAEQGcWWnwBbpaJz7T PiA

We ask that you use your public name in the slack (as opposed to an anonymous name), and include a picture of yourself in the avatar to make this space more of a community. Learning is a social endeavor, and we hope that this medium can help, in part, to replace the social aspect of in class activities. Additionally, familiarity with Slack and other workplace collaboration tools will signal your technical proficiency in your future workplaces.

Reflection questions for asynchronous activities will also take place through the slack as well. **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 lines
- It is not appropriate to answer questions about homework by posting the complete answer.

Finally, please respect the privacy of other students in the course. The Direct Message function of the slack should not be used. If you wouldn't post it on a Canvas Message Board do not do it on the slack.

**Grading Questions and Concerns**

For questions or concerns about grades/scores ("when will my Project 4 be graded?" "I think I got an incorrect score on problem 3", etc), please submit your concern via https://forms.gle/bmbgUcmrBH1QgVw8
Those concerns will be addressed as soon as possible - however preparing the learning experience will always take precedence over administrative concerns.

**General questions, desire for explanations, etc**, please redirect to Slack, 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. Instructions for how to set up your computer for this course can be found in the [Getting Started document](#).

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*, written by Paul Resnick, with additions by Jaclyn Cohen, Stephen Oney, Samuel Carton, and Lauren Murphy. [https://www.programsinformationpeople.org/runestone/static/publicpy3/](https://www.programsinformationpeople.org/runestone/static/publicpy3/)

Note that this course will be conducted in **Python 3**, not Python 2. If you have previously used Python 2, it's not a big adjustment there are just a few changes, most of which you won't ever encounter. Instructions for installing Python 3 are included in the [Getting Started document](#).
## Assignments and Grading

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<thead>
<tr>
<th>Component</th>
<th>% of grade</th>
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<tbody>
<tr>
<td>DYUs (2) + Homeworks (7)</td>
<td>50%</td>
</tr>
<tr>
<td><em>Lowest two scores by percentage will be dropped</em></td>
<td></td>
</tr>
<tr>
<td>Projects 1-3</td>
<td>30%</td>
</tr>
<tr>
<td><em>Lowest project score by percentage will be dropped</em></td>
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<tr>
<td>Final Project</td>
<td>20%</td>
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<tr>
<td>Proposal (20% of project grade)</td>
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<tr>
<td>Data Checkpoint (20% of project grade)</td>
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<tr>
<td>Demo &amp; Documentation (60% of project grade)</td>
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<td><em>No components will be dropped.</em></td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
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### Demonstrate Your Understanding (DYUs)

Demonstrate Your Understanding (DYU) assignments are online quizzes that are designed to make sure that you understand the key points that were covered in class. DYUs are open notes, open browser, open editor, self-paced, untimed, and can be taken multiple times. Only your best score will count for each DYU.

### Homeworks

There will be weekly labs/homeworks.

**Homeworks assigned in a given Tuesday lecture will be due at Noon on the friday of the following week** - 10 days later! This is designed to 1) give you the flexibility to handle all of your responsibilities, and 2) ensure that members of the Monday Lab group have a chance to attend lab before the homework due date. We encourage you to complete the homework before the next lecture so that you can keep up -- the material in this course is cumulative.

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. This means that it's possible to get more than 100% on certain homeworks, and by extension to get a course grade greater than 100%. Doing so would earn you an A+. Extra credit solutions must be turned in at the same time as the homework with which they are associated, and the late policy applies to the entire homework grade (base grade + extra credit). Generally, the extra credit problems will be much more challenging than the base homework and worth a lot fewer points, but they will also be super fun!

### Projects 1-3

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. The late policy applies to any projects submitted after the due time/date. There are no “excused” late or missing projects except under extreme circumstances (see below).

**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. The late policy applies to any project components submitted after the relevant due time/date. There are no “excused” late or missing project components except under extreme circumstances (see below).

**Attendance**
Attendance at all lectures and discussion sections is strongly recommended but ultimately optional. We will not take attendance and you do not need to tell anyone if you will miss class. Lecture Notes will be made available by the beginning of the relevant lecture, but not beforehand (as a matter of practicality, not principle). Lecture Notes are intended to be pretty comprehensive, but of course will not cover every detail of what is said in class (for example, student questions and instructor answers). The teaching team will not be able to provide any additional material to cover what you may have missed other than what is already being produced and shared.

**Letter Grades**
Your final letter grade in the course will be based on the percentage of the total points available that you earn. As noted, it’s possible to get more than 100%.

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<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>A+</td>
<td>&gt;100 %</td>
</tr>
<tr>
<td>A</td>
<td>94-99.99%</td>
</tr>
<tr>
<td>A-</td>
<td>90-93.99%</td>
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<tr>
<td>B+</td>
<td>87-89.99%</td>
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<tr>
<td>B</td>
<td>83-86.99%</td>
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<tr>
<td>B-</td>
<td>80-82.99%</td>
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<tr>
<td>C+</td>
<td>77-79.99%</td>
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<td>C</td>
<td>73-76.99%</td>
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<td>C-</td>
<td>70-72.99%</td>
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<tr>
<td>D+</td>
<td>67-69.99%</td>
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<tr>
<td>D</td>
<td>63-66.99%</td>
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<tr>
<td>D-</td>
<td>60-62.99%</td>
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<tr>
<td>E/F</td>
<td>0-59.99%</td>
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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.”

Late Policy, Extensions, and Excused Absences

Homework may be submitted any time.
Answer keys to the homework will be posted on Sunday at noon.
Late Homework submitted before the answer key is posted will receive a 20% deduction.
Late homework submitted after the answer key is posted will receive a 40% deduction.

Additionally late homework will be graded at the instructor's leisure, and not subject to regrades.

Late projects will be penalized according to the following policy
- 0:01-24:00 hours after the deadline: 10% off
- 24:01-48:00 hours after the deadline: 20% off
- 48:01-72:00 hours after the deadline: 30% off
- 72:01-96:00 hours after the deadline: 40% off
- > 96 hours after the deadline: 100% off

Canvas will show you when your assignment is late -- it's any time after the deadline! Yes, even ten minutes. Gotta draw the line somewhere. It's good training for absolute software deadlines, should those be things you encounter in your future. After four days, we will no longer accept it.

Extensions and Exceptions

The teaching team is aware of the stress that everyone is under as a result of the pandemic. Extensions and exceptions will be determined on a case by case basis. Please email amadaman@umich.edu. Please be proactive about managing your academic progress in these turbulent times. If you need help please reach out early.

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.

Course Topics

Here is a list of the topics we will cover in 507 this semester. The precise timing and sequence of these topics may change. Please refer to the lecture schedule to keep track of upcoming topics.

1. Program design, debugging, and testing
2. Handling user input
3. Reading and working with data: files, CSVs, json
4. git and GitHub
5. Web APIs
6. Using OAuth and caching with web APIs
7. Web scraping and crawling with Beautiful Soup
8. SQL and relational databases
9. Building web applications with Flask

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 of 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:
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/](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/](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.