

UNIVERSITY OF MICHIGAN SCHOOL OF INFORMATION
SI664 - Building Interactive Applications
Syllabus

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Website: <https://umich.instructure.com/courses/656089>
Course Materials: <https://www.dj4e.com>

Instructional Model

Our course is a **hybrid** course. That means that a large fraction of the essential lecture and discussion instruction will be available online and asynchronous. Synchronous elements (office hours, discussions, lecture periods) will not be required attendance – but they will also not be recorded. There will be asynchronous elements that are “Required Viewing” where students will need to view material to earn a grade.

Revision History

Version 2.0 23-Jan-2024

- **Move the date of the first exam by a week, reduce the number of exams from five to four**

Required Face-to-Face Attendance: There **will** be three tests during the semester that **require attendance** during the discussion section (check the schedule below). These tests may be on paper or may use a lock-down browser that requires you to be in the room to take the test. If a student has an approved accommodation, the tests will be available at the Testing Center so that all accommodations can be met.

Excused Absences for Exams: There are always things that come up that are good excuses as to why you might need to reschedule a test – perhaps travel to an interview or conference attendance. If a student requests more than one excused absence for a face-to-face test, their score on that test will be limited to 80% - so make sure to plan ahead. Registering for another class during the lecture period for this is **not** an excused absence. Do not register for two classes with lectures at the same time where both classes require attendance and expect that we will reschedule all the required attendance elements of the course.

Final Exam: There are two parts to the final exam that are online and asynchronous so there is no face-to-face attendance requirement for the final exam. You can take it anytime and anywhere during the multi-day final exam period.

Course Description

This course is an introduction to interactive web applications. It covers both theoretical and practical aspects of web applications, including database design, object-relational models, Model-View-Controller, HTML templating, APIs and Structured Query Language (SQL).

Pre-Requisites

The only pre-requisite for this course is to be able to program in Python. I strongly recommend *against* taking this course in the same semester you are taking a first programming course. It would be nice to have some experience in HTML or CSS from a prior course or experience, but the first part of the class will cover the basics of HTML and CSS. If you have no prior experience in HTML and CSS you should budget a little extra time for the first few weeks of this course. If you have experience in HTML and CSS some of the early assignments will be straightforward.

Learning Objectives

The purpose of this course is to provide students with all necessary skills for building and deploying database-backed web sites. The Learning Objectives for this course are to help students develop solid competency in:

- Understand the structure of a web application, the Request-Response-Cycle, and the MVC model
- Understand and explain the benefits of the relational model and normalization
- Transform data models into database designs
- Create data models using an Object Relational Mapping system (ORM)
- Increase skill in the Python programming language
- Increase skill in browser front-end technologies like HTML, CSS, JavaScript, and JQuery
- Build and use JSON based APIs and use them in web applications
- Using JavaScript libraries like jQuery
- Be skilled in developing complete web applications (Front End and Back End) using Django

Course Textbook

There is no official textbook for this course. Since Django is free and open source, there are a wide range of free materials available that describe Django. As you grow as a programmer, finding and using online resources is an important part of skill building. Print books tend to stagnate and have limited scopes - online resources tend to expand, grow, and remain updated.

The first part of this course will depend heavily on the Django Project Tutorial:

<https://docs.djangoproject.com/en/4.2/intro/>

We will reference other materials as the course progresses.

Lecture Materials and Sample Code

The course has a supporting web site that will contain materials, video lectures, assignments:

<http://www.dj4e.com/>

All materials from this site will be pulled into Canvas at the appropriate time and given due dates, so you may ignore this site if you like. Some homework assignments will be available on the site before they are assigned in Canvas - **doing the homework on DJ4E site is not the same as doing the homework from Canvas**. You can watch this site for a preview of upcoming events. Note that this web site is under construction this semester, so it may only be a few days ahead of the course.

Required Tools

The software used for the course is 100% free. Most of the course will be done in a free online Python web development environment called PythonAnywhere (www.pythonanywhere.com). Students will also need a GitHub account and store homework solutions in GitHub private repositories. Advanced students can install Django and develop the homework assignments on their personal computers if they like, but most of the examples and demonstrations will be using PythonAnywhere.

Course Outline

WEEK	Date	LECTURE TOPIC	Assignments
1	January 12	Django install / HTML	TUT1, HTML
2	January 19	Shell / CSS	Shell, CSS
3	January 26	Django Models, Intro SQL	SQL 1, TUT2
4	February 2	MVC / Django Views / Templates	TUT3
5	February 5 - 9	Written Exam 1 in Discussion *	
5	February 9	Forms / Python Objects / Generic Views	TUT4
6	February 16	Cookies / Sessions / One-to-Many	Hello World
7	February 23	Django Forms / Authentication	Autos / CRUD I
	March 1	Spring Break 🌴	
8	March 8	CRUD Review	Cats / CRUD II
9	March 15	Ads: Owned Rows / Menus / Crispy	Ads1
10	March 18-22	Written Exam 2 in Discussion *	
10	March 22	Ads: Pictures / JavaScript	Ads + Pictures
11	March 29	Ads: Comments	Ads2
12	April 5	Ads: User Interface / jQuery / JSON	Ads3
13	April 19	Ads: Searching / Tagging	Ads4
	April 23	Classes End	
	April 25 - May 1	Final Exam (online) * *	Exam 3 / Exam 4

Note: Schedule, topics, and assignments may be changed/adjusted as the semester progresses.

Personal concerns

If a personal concern or private matter requires communications with the instructor **only**, never hesitate to talk to Chuck directly or email him at csev@umich.edu.

Feel free to also contact the UMSI Office of Student Affairs (OASA) if an issue arises that poses a challenge to your academic success. OASA is especially useful if an emergency requires you to step away from your coursework. OASA can help reach out to all your instructors in order to make them aware of your situation. OASA is also an excellent resource if you have questions about enrollment, retention, graduation, and career success. You can also contact OASA whenever you require academic or personal advising while in the program.

Late Policy

Late assignments will be penalized by 20% times the number of days late. Homework that is late 5 days or more will receive zero credit.

Homework

Throughout the course there will be one or more weekly programming assignments that will require a Django application to be developed and turned in - often to an automatic grader which will run tests on the running application. Most weeks there will also be an online quiz. Some weeks will assign more than one assignment. Students should carefully monitor the "Modules" tab in the course Canvas site to make sure not to miss any assignments.

Grading

The graded work in the course will be weighted as follows to determine a final percentage grade:

Required Viewing	10%
Programming Assignments	50%
Exams	40% (Lowest Exam Dropped)

Grades will be awarded as follows:

A	93% and above
A-	90% and above
B+	87% and above
B	85% and above
B-	77% and above
C	73% and above
D	70% and above
F	Below 70%

Using Slack

The course will provide students with an informal Slack channel to contact the instructional staff and communicate with other students in the class. Slack is an *informal* and *optional* feature of this course and there is no *requirement* for students to participate in Slack to complete this course. Slack is a great place to get technical help because other students might help you. Please do not post code solutions.

Giving and Receiving Assistance

Learning technical material can be challenging. We move quickly through a wide range of topics. Our goal is for you to succeed in the course, and we encourage you to get help from anyone you like, especially in the portion of the course before the midterm.

You may get help even in completion of assignments. However, you are responsible for learning the material. Be sure that the assistance you receive is focused on gaining knowledge, not simply to finish assignments and get a grade. If you receive too much help and/or fail to master the material, you will crash and burn at the midterm, which you must perform on your own.

If you receive assistance with any assignments, please indicate the nature and the amount of assistance you received. If the assignment involves computer code, add a comment crediting sources (as in any academic paper) or indicating who helped you and how.

If you are a more advanced student and are willing to help other students, please feel free to do so. Just remember that your goal is to help teach the material to the student receiving the help.

It is always appropriate to ask for and provide help on assignments via the course mailing list or during the optional labs.

ChatGPT and Other AI Resources

You are allowed to use AI-based resources for any aspect of the course that is done with your laptop open (writing programs, taking online quizzes, watching lectures, reading course material, etc.). As a matter of fact, we encourage you to learn to use these resources responsibly and effectively to **help you learn**. If you decide to use these or other resources to short cut learning the course material, there will be situations in the course where you will find yourself at a distinct disadvantage. It is your responsibility to *understand* the course material. Merely using these resources to produce homework solutions that you don't fully understand is only cheating your opportunity to learn the material. In a course like this, assignments start simple and focused and then build to be more complex as the course progresses. If you "lean heavily on AI" to get full marks on the early assignments in the course, you will find it challenging to succeed in the exams or the later assignments. Use AI to help you learn – not to avoid learning. This is college, and you are responsible adults, and I give you the ability to make your own .

Collaboration

UMSI strongly encourages collaboration while working on some assignments, such as homework problems and interpreting reading assignments as a general practice. Active learning is effective. Collaboration with other students in the course will be especially valuable in summarizing the reading materials and picking out the key concepts. You must, however, write your homework submission on your own, in your own words, before turning it in. If you worked with someone on the homework before writing it, you must list any and all collaborators on your written submission. Each course and each instructor may place restrictions on collaboration for any or all assignments. Read the instructions carefully and request clarification about collaboration when in doubt. Collaboration is almost always forbidden for take-home and in class exams.

Plagiarism

All written submissions must be your own, original work. Original work for narrative questions is not mere paraphrasing of someone else's completed answer: you must not share written answers with each other at all. At most, you should be working from notes you took while participating in a study session. Largely duplicate copies of the same assignment will receive an equal division of the total point score from the one piece of work.

You may incorporate selected excerpts, statements or phrases from publications by other authors, but they must be clearly marked as quotations and must be attributed. If you build on the ideas of prior authors, you must cite their work. You may obtain copy editing assistance, and you may discuss your ideas with others, but all substantive writing and ideas must be your own, or be explicitly attributed to another. See the (Doctoral, MSI, BSI) student handbooks available on the UMSI intranet for the definition of plagiarism, resources to help you avoid it, and the consequences for intentional or unintentional plagiarism.

Class Recordings

We will be doing audio and video recording of all sessions to enable those who cannot attend class in person on a given day to access the content. These recordings will not be made available publicly.

Recordings of all sessions will be available on Canvas only to students registered for this class. As part of your participation in this course, you may be recorded. If you do not wish to be recorded, please contact the professor during the first week of class to discuss alternative arrangements. Students may not copy and share the lecture videos with those not in the class, or upload them to any other online environment (this is a violation of the Federal Education Rights and Privacy Act (FERPA)).

Personal recordings are prohibited except with permission

Students are prohibited from recording/distributing any class activity without written permission from the instructor, except as necessary as part of approved accommodations for students with disabilities. Any approved recordings may only be used for the student's own private use.

Disability Statement

The University of Michigan recognizes disability as an integral part of diversity and is committed to creating an inclusive and equitable educational environment for students with disabilities. Students who are experiencing a disability-related barrier should contact [Services for Students with Disabilities](#) <https://ssd.umich.edu/>; 734-763-3000 or ssdoffice@umich.edu). For students who are connected with SSD, accommodation requests can be made in Accommodate. If you have any questions or concerns please contact your SSD Coordinator or visit SSD's Current Student webpage. SSD considers aspects of the course design, course learning objects and the individual academic and course barriers experienced by the student. Further conversation with SSD, instructors, and the student may be warranted to ensure an accessible course experience. The instructional team will treat any information that you provide in as confidential a manner as possible.

Student Mental Health and Wellbeing:

Option 1:

University Students may experience stressors that can impact both their academic experience and their personal well-being. These may include academic pressures and challenges associated with relationships, mental health, alcohol or other drugs, identities, finances, etc. If you are experiencing concerns, seeking help is a courageous thing to do for yourself and those who care about you. If the source of your stressors is academic, please contact me so that we can find solutions together. Ashley Ewearitt, a Counseling and Psychological Services (CAPS) counselor, is embedded in UMSI, schedule an appointment with her by copying and pasting the following url into your browser: <https://bit.ly/Ewearitt-CAPS-UMSI>

For personal concerns, U-M offers a variety of resources, many which are listed on the [Resources for Student Well-being](#) webpage. You can also search for additional well-being resources on that website.

Credit where credit is due

This course builds on much prior effort from folks who taught this course earlier. These include Caitlin Holman, Jim Eng, Colleen van Lent, Jackie Cohen, Anthony Whyte, Stephanie Schouman and others.