**University of Michigan School of Information**

**SI664 - Building Interactive Applications**

**Syllabus**

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Office hours: Online only - See Canvas

Website: https://umich.instructure.com/courses/503635

Course Materials: [https://www.dj4e.com](http://www.php-intro.com/)

**Instructional Model Winter 2022**

Our course has traditional face-to-face discussions and lectures Winter 2022. As the semester progresses, there may need to be adjustments and we will communicate clearly if things change. Attendance is neither graded nor required. All the assessments will be available online. This course is challenging and fast-paced and not well-suited to procrastination. Students who chose not to participate in the face-to-face / synchronous elements of the course must take responsibility for keeping up with and learning the material. Masks are required in class until further notice. There is no eating or drinking in any face to face rooms. If you need to deal with something - you can step out of F2F class at any time.

**F2F Meeting Recordings**

The face to face lectures and discussions will be recorded for those who cannot attend. Links to the recordings will be provided in Canvas. These recordings will be kept private and only available for a few weeks. The recordings are not retained or archived for a long time. Students who miss class should view the recordings before they are no longer available.

**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 an 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/3.1/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**

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| **WEEK** | **Date** | **LECTURE TOPIC** | **Assignments** |
| 1 | January 7 | HTTP / Django install / HTML / CSS | TUT1, HTML, CSS |
| 2 | January 14 | Django Models, Intro SQL | SQL 1, TUT2 |
| 3 | January 21 | MVC / Django Views / Templates | TUT3 |
| 4 | January 28 | Forms / Python Objects / Generic Views | TUT4 |
| 5 | February 4 | Cookies / Sessions / One-to-Many | Hello / Unesco |
| 6 | February 11 | Django Forms / Authentication | Autos / CRUD I |
| 7 | February 18 | Exam Review | Cats / CRUD II |
| 8 | February 25 | Midterm Exam | CRUD |
|  | Feb 28 – March 4 | Spring Break **🌴** |  |
| 9 | March 11 | Ads: Owned Rows / Menus / Crispy | Ads1 |
| 10 | March 18 | Ads: Pictures and Comments | Ads2 |
| 11 | March 25 | Ads: User Interface / JavaScript | Ads3 |
| 12 | April 1 | Ads: Searching / Tagging | Ads4 |
| 13 | April 8 | Ads: Pagination 🍋 | Ads5 |
| 14 | April 15 | TBD |  |
|  | April 21-26 | Final Exam (online) |  |

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:

Programming Assignments 50%

Programming Midterm 25%

Final Exam 25%

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.

**Academic Integrity**

***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 include a reference to your collaborator(s) including their uniqname in your code or elsewhere in your written submission. Each course and each instructor may place restrictions on collaboration for any or all assignments. Read the instructions careful and request clarification about collaboration when in doubt. Collaboration is generally forbidden for take-home and in class exams.  
  
**Plagiarism**

All written submissions must be your own, original work. Original work for narrative questions may not include 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.

**Accommodations for Students with Disabilities**

If you think you need an accommodation for a disability, please let me 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 me aware of your needs, we can work with the Oﬃce of Services for Students with Disabilities (SSD) to help us determine appropriate accommoda­tions. SSD (734-763-3000; [ssd.umich.edu/)](http://ssd.umich.edu/) typically rec­ommends accommodations through a Verified Individualized Services and Accommodations (VISA) form. I will treat any information that you provide in as confidential a manner as possible.

**Student Mental Health and Wellbeing**

The University of Michigan is committed to advancing the mental health and wellbeing 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.  
  
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/

**COVID-19 statement**

For the safety of all students, faculty, and staff on campus, it is important for each of us to be mindful of safety measures that have been put in place for our protection. By returning to campus, you have acknowledged your responsibility for protecting the collective health of our community. Your participation in this course on an in-person basis is conditional upon your adherence to all safety measures mandated by the State of Michigan and the University, including maintaining physical distancing of six feet from others, and properly wearing a face covering in class. Other applicable safety measures may be described in the [Wolverine Culture of Care](https://campusblueprint.umich.edu/uploads/Wolverine_Culture_of_Care%20sign_8.5x11_UPDATED_071520.pdf) and the [University’s Face Covering Policy for COVID-19](http://ehs.umich.edu/wp-content/uploads/2020/07/U-M-Face-Covering-Policy-for-COVID-19.pdf). Your ability to participate in this course in-person as well as your grade may be impacted by failure to comply with campus safety measures. Individuals seeking to request an accommodation related to the face covering requirement under the Americans with Disabilities Act should contact the [Office for Institutional Equity](https://oie.umich.edu/american-with-disabilities-act-ada/). If you are unable or unwilling to adhere to these safety measures while in a face-to-face class setting, you will be required to participate on a remote basis (if available) or to disenroll from the class. I also encourage you to review the [Statement of Students Rights and Responsibilities](https://oscr.umich.edu/statement), which includes a [COVID-related Statement](https://oscr.umich.edu/sites/oscr.umich.edu/files/2020_statement_addendum_final_approved.pdf) Addendum.

**Credit where credit is due**

This is a new course for me**,** but 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.