Data-driven Web Applications
INFO 3300; CS 3300; INFO 5100

ONLINE TEACHING VERSION
(changes highlighted in dark red)

Instructor: Prof. Jeff Rzeszotarski, jeffrz [at] cornell.edu

Time & Location: MANDATORY: Pre-recorded lectures on Canvas
OPTIONAL: M/W/F 11:05-11:55 on Zoom

Course Prerequisites: CS 2110 & INFO 2300 (or prof. permission)

Course Website: https://jeffrz.com/info3300/
Course Announcements Q&A: https://campuswire.com/c/GF8A0A226/
Assignment Submission: CMS

Graduate TAs: Ian Anders Arawjo (iaa32 [at] cornell.edu)
Sharifa Sultana (ss3635 [at] cornell.edu)
Swati Mishra (sm2728 [at] cornell.edu)

Course Office Hours: See staff directory pinned on Campuswire

https://campuswire.com/c/GF8A0A226/feed/1

Contacts: Prof. Rzeszotarski for course administration
info3300staff [at] gmail.com for Prof+Grad TAs
Post to Campuswire any content questions
Course Description

The web has become an outstanding environment for telling stories with data. This course will cover technologies for representing, modeling and displaying data in the context of interactive web pages. Practical skills for building web pages will be mixed with data mining algorithms and visualization design theory. We will use the D3 Javascript library to develop both static and dynamic visualizations, learn more about programming in Javascript, and explore web scalable vector graphics (SVG). Through design critique and formal study, we will identify the techniques visualization developers employ to create the “right” visualization for a given use case. This course introduces a number of popular data mining models and algorithms which we will incorporate into web visualizations.

Learning Objectives

- Develop competency in client-side visualization development
- Create static and interactive web visualizations using a visualization library
- Learn trade-offs and best practices for matching data to visual elements
- Get practical experience gathering and visualizing real-world data

Structure

This class contains lectures on visualization design concepts (30%) and live coding demonstrations (70%). You will complete 9 homework assignments over the course of the term, which will involve both development and design content. All students will complete one group project in randomly assigned teams of 3. Group projects will have 3 milestones. There are no assigned readings for this course.

Mandatory content is pre-recorded and posted on Canvas at the start of each week. You are expected to keep up with lecture content on your own throughout the term. We will also be holding optional class sessions during the normal class time. These sessions will involve critique activities, review of content, Q&A, and additional material not related to the core learning objectives of the class. Attendance in these sessions is completely optional and will not be used for final attendance grades.

All coding demonstrations will make use of the course repository on Github. When recordings are released, both prompts and notes will be posted to the course repository. You are encouraged to clone the repository on your own computer at the start of class so that you can follow along and edit the prompt as the recording runs.

Viewing course materials is important to your overall success and is required. While all content is pre-recorded, we will not be directly measuring who has watched content.
and who has not viewed it. A different mechanism will be used to account for general “attendance” for the course.

Students enrolled in INFO5100 will have the option of completing a second, more substantial group project. Students in 3300 and those in 5100 who are not doing a project will have a take-home exam. There is no prelim for this course.

Course Attendance & Absences

As the course is conducted online and we do not favor student monitoring tech, attendance will be taken through an online survey. Each week we will post a new survey link. At some point during the recorded lectures for the week we will provide a secret key word for you to enter into the survey. You must enter the secret key word into the survey before the start of the following week.

In the first half of the term we conducted face-to-face attendance. Students will have 3 excused absences for that period of time.

Completing these attendance surveys is completely optional. If you choose not to complete a survey, it will not count against you. At the end of the term we will determine attendance grades using the following formula:

\[ \frac{\text{# of times present in F2F attendance}}{\text{# of times F2F attendance was taken}} + 3 \times \left( \frac{\text{# of surveys completed correctly}}{\text{# of surveys you chose to complete}} \right) \]

Thus, if you want your attendance grade from the first half to stand, complete no surveys. If you want to boost your attendance grade substantially, then complete surveys correctly. If for some reason you want to reduce your attendance grade, submit incorrect answers for surveys.

Assignments & Late Work

Homework will be assigned on Mondays and are generally due at 11:59PM ET on the next Friday, 11 days later. Late work will receive a 0 (even if it is only 1 second late). You will use CMS to submit homework assignments. Projects will be submitted via your group’s shared GitHub repository.

There will be no further use of slip-days for homework assignments. You must turn your homework in before the deadline. See the extra credit policy for details about what you will earn from any slip-days you currently possess.

We will drop the lowest homework score when computing final class grades.
Getting Help

Please make use of the following channels of communication:

- The course website and policy documentation for basic procedures and rules
- Office hours for individual help on assignments (see here for a schedule)
- Posting on the course discussion forum – please search for similar questions before you post a new one
- For personal questions, use the course email info3300staff@gmail.com
- Do not email the TAs or instructor unless they reach out to you directly
- Do not email about late homework or absences

Grading

While in the past attendance has always been integrated into final course grades, this year we will be offering four grading options. Your final grade will be computed automatically based on the better of these four options:

<table>
<thead>
<tr>
<th></th>
<th>+ Attendance</th>
<th>Exam Bias</th>
<th>HW Bias</th>
<th>- Attendance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class Attendance</td>
<td>20%</td>
<td>10%</td>
<td>10%</td>
<td>0%</td>
</tr>
<tr>
<td>Weekly Homework</td>
<td>30%</td>
<td>25%</td>
<td>45%</td>
<td>40%</td>
</tr>
<tr>
<td>Project 1</td>
<td>20%</td>
<td>20%</td>
<td>20%</td>
<td>25%</td>
</tr>
<tr>
<td>Project 2 OR Take-home Exam</td>
<td>30%</td>
<td>45%</td>
<td>25%</td>
<td>35%</td>
</tr>
</tbody>
</table>

Letter grades will be assigned using the integer part of your final %. For example, 96.01 and 96.99 both resolve to 96%, which would be an A- on the grade scale.

Note that we will still be using an adjusted grade point scale for this course. Due to the large amount of extra credit that you can earn, it is entirely possible for your final grade to total higher than 100%.

<table>
<thead>
<tr>
<th>&gt;=100%: A+</th>
<th>80.0%-82.9%: C+</th>
</tr>
</thead>
<tbody>
<tr>
<td>97.0%-100%: A</td>
<td>77.0%-79.9%: C</td>
</tr>
<tr>
<td>93.0%-96.9%: A-</td>
<td>73.0%-76.9%: C-</td>
</tr>
<tr>
<td>90.0%-92.9%: B+</td>
<td>70.0%-72.9%: D+</td>
</tr>
<tr>
<td>87.0%-89.9%: B</td>
<td>66.0%-69.9%: D</td>
</tr>
<tr>
<td>83.0%-86.9%: B-</td>
<td>60.0%-65.9%: D-</td>
</tr>
</tbody>
</table>
Extra Credit

There will be several opportunities for extra credit this term. Each leftover excused absence at the end of the term will earn 1/3% extra credit, up to a 1% grade bonus. A 2% bonus will be offered to students who post a neat visualization example from the web to the “Visualization Examples” tag on Campuswire before or after Spring Break. Alternatively, you can post an interesting dataset to the “Datasets” tag on Campuswire (no Kaggle or other major data repositories). No duplicates allowed, so do this earlier rather than later. 2% can be earned via SONA credits (see policy document for more details). Each remaining slip-day will earn 0.5% of extra credit.

In the second half of the term, you will have the opportunity to complete extra credit “challenge” assignments. Assignments will be provided on Mondays and must be completed by 11:59PM the following Sunday in order to be counted. Challenge assignments are graded on a completion credit basis - show an honest attempt at solving the problem / following directions and make sure that your code does not cause errors or exceptions. Each one of the 5 challenge assignments will be worth an additional 1% bonus to your final grade.

Academic Integrity

All students are expected to abide by the University’s Code of Academic Integrity. This is especially critical when working remotely, as we will be more sensitive to potential integrity issues.

In-class work

Class will often involve a programming problem that we will work on together. As class content will be delivered online, you must have a laptop with access to Canvas and Zoom. Please reach out to course staff if this is going to prove to be difficult. Please be sure to mute your audio unless directed otherwise during in-class activities and be aware of how your video and audio conduct might impact fellow students. Do not take photographs or recordings of lecture content without explicit permission. Any technological disruptions will result in loss of attendance for the day.

Academic Integrity

We will follow university policies as outlined in the Academic Integrity Handbook. You are encouraged to discuss homework, but each student will complete assignments
alone. TAs are present to assist in your learning process but are not expected to offer specific code suggestions. Learning from other individuals’ code is an important part of programming, but for group projects the code should be the work of the group members except for standard libraries such as D3, lodash, and jQuery. Any code used in projects that was not written by the group members should be placed in separate files and clearly labeled with their source URLs. If you have benefitted from online resources (such as examples or StackOverflow answers), list the URLs in comments in your own code, even if you did not directly copy anything. Recall that some workplaces ban StackOverflow outright to avoid diluting their IP. Project work that relates to your other classes or research is encouraged, but you may not recycle assignments. There must be no doubt that the work you turn in for this class was done for this class and this class alone. This includes lecture notes and code! Integrity issues will be adjudicated at the discretion of Professor Rzeszotarski and course staff and include penalties such as referral to the Academic Integrity Board.

Blatant instances of copying lecture notes into homework will be considered integrity violations. This is a zero-tolerance policy. If you are concerned about inadvertently duplicating course code in your submissions, try reading the course notes first, closing them out, and then coding yourself in a new environment or editor. If you get stuck, switch back again but avoid having both open at the same time.

Citing Sources

This section is based on an excellent citation guide created by Prof. Kyle Harms. We will largely be following these guidelines.

Any code that you did not write specifically for this class is considered to be external code. This includes example code from class, code from other classes at Cornell you wrote, and external code from web sites (e.g. StackOverflow). All code submitted for projects and homework assignments, unless otherwise indicated, must be your own. No external code will be permitted. This includes importing helper libraries like jQuery. Standards for projects will be looser in terms of importing libraries - refer to assignments for specific instructions.

Any external code used must be cited within the source code with comments.

Late or Missing Work

[The following rules apply under normal circumstances. If you have experienced a personal crisis or a medical condition contact the Instructor as soon as possible. The earlier we hear from you, the more we can help. We can only provide assistance if we
are made aware of the problem in a timely fashion. Do not wait until the end of term to disclose potential issues which might have reduced your grades.

If you do not submit work before the stated deadline, then we will record a zero. There will be no exceptions. This policy is harsh, but it is necessary for a class of this size.

All assignment deadlines are known well in advance. For most students with accommodations, you should plan ahead and complete your assignment before the deadline.

Submitted files will be graded as-is and absolutely no excuses for mistaken submissions will be accepted. Verify on CMS that you have provided the correct files after submission. Any archive files must be in a format that can be opened by recent Windows and Apple OS X computers. Unopenable submissions will receive no credit. It is your duty to submit the correct files in a timely manner and verify that Canvas has properly stored your submission before the deadline.

In the very unlikely event that CMS is down or you experience computer problems, you may email submissions to the course staff email address using your Cornell email account. You must email the file to the course staff email address before the homework due date - screenshots, file metadata, and git commit logs are too easy to modify.

Slip Days / Extending Deadlines

No more slip-days are being offered. See extra credit policy.

Regrade Requests

You may request a regrade, which will be granted on a case-by-case basis. Regrades requests must be submitted by email to info3300staff. Please refer to the specific instructions on the form. Include the relevant fields in your email, though there will be no need to include a TA. No new files will be accepted.

Accepted requests will receive a complete regrade by course staff. This means that every question will be graded again in detail. In the past this has resulted in both point increases and point reductions as new issues were discovered. The instructor encourages students to think carefully whether a 1-point regrade is worth the risk.

Regrades must be submitted within one week of the time in which homework was returned (no exceptions). For example, if homework was marked as "Graded" on Canvas at noon on Thursday, then regrades must be emailed before noon on Thursday of the following week. No late regrade requests will be accepted.
On Decorum

Though it should go without saying, please observe respectful behavior while in class lectures. This includes remaining silent during lectures, answering questions posed to the class, and refraining from leaving during the middle of the lecture.

Be aware that other students will be sitting near you, and if you choose to use a computer during class, others will likely be able to see your screen. If you have a laptop, you will be expected to use it for relevant work. For some, editing code along with the lecture may be an effective learning strategy. As a result, laptops are welcome during class lectures. However, as attentional resources became divided, task performance suffers substantially. At the same time, participants in studies of attention rarely estimate the costs of divided attention accurately. In other words, laptop users are likely to overestimate their ability to multitask. Laptop use has been proven not only to hinder users’ classroom performance, but also the performance of nearby peers (whether they also use a computer or not). Be thoughtful. If you choose to use a laptop during lectures, please sit on the upper section of the hall.

Should you have issues with an undergraduate or graduate teaching assistant, please reach out to the Instructor directly. Though it once again ought to go without saying, please avoid posting about "stupid TAs" on the course forum, pitting TAs against other course staff members, or calling a graduate TA "useless" to their face (all of which have happened in the past and make the instructor very sad).

Note on Inclusiveness

This course involves both self-directed assignments as well as in-class exercises. It is possible that in the course of this class you will encounter datasets, visualizations, or arguments that do not match your worldview or perhaps might even be upsetting. Course staff cannot guarantee such events will not occur, and do not want to hamstring the potential projects that teams can complete with a set of content requirements. Students must be respectful throughout the critique process and in-class activities, acknowledging that at times discussion can be fraught or argumentative. Course staff will not tolerate intentional displays of disrespect or marginalization during class time and out of class project work. Penalties will range from loss of participation grade to failure of projects/assignments to referral to university officials on a case-by-case basis.
Having experienced environments lacking in tolerance and inclusivity earlier in life, the Instructor will try their best to be mindful of potential issues with course content throughout the term. However, they might miss something objectionable, inadvertently encounter an instance of implicit bias, or misspeak. If during the semester you have concerns about the way the course is going or are having a negative experience, please reach out to the Instructor directly.

**Special Accommodations**

We will make every effort possible to ensure that the class works for all students. Students who have self-identified to Cornell SDS as needing special accommodations in the classroom should contact the professor at the time of enrollment or during the first two weeks of class so that any course materials can be adapted, and other appropriate arrangements made. Failure to do so may prevent us from making the proper accommodations. Lectures will not be recorded unless SDS requires it. If there is a specific event that you are concerned about (such as an exam), please inform us at least two weeks in advance so that we have time to make arrangements.

**SONA Credits**

Many researchers on campus need participants for user studies and other types of experiments. The SONA system allows you to register for studies. You will receive 0.5% extra credit for each SONA credit, up to a maximum of 2.0% for the term. Participating in studies is a great way to find out what real research looks like. To register, please visit: [https://cornell-comm.sona-systems.com](https://cornell-comm.sona-systems.com)