I. **Course Overview**

This course will introduce students to the principles and algorithms necessary for effective visual analysis of data. Students will explore many aspects of visualization, including those for spatial (e.g. CT or MRI) and non-spatial data (e.g. financial data). The course begins with an overview of principles from perception and design, continues with skills for critiquing visualizations, and then focuses on visualization techniques and algorithms for a broad range of data types. Students will acquire hands-on experience using cutting edge visualization systems as well as programming interactive visual analysis tools.

II. **Texts and Materials**

**Recommended:** [Visualization Analysis and Design](#)  

**Optional:** [The Visualization Handbook](#)  

Links to additional texts shall also be provided throughout the semester.

III. **Basis for Final Grade**

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Percent of Final Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project 1: Visualizing Data with <a href="#">Tableau</a></td>
<td>10%</td>
</tr>
<tr>
<td>Project 2: Visualizing Data with <a href="#">D3.js</a></td>
<td>10%</td>
</tr>
<tr>
<td>Project 3: Visualizing Data with <a href="#">Processing</a></td>
<td>10%</td>
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<tr>
<td>Project 4: Visualizing Data with <a href="#">VTK</a></td>
<td>10%</td>
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<tr>
<td>Project 5: Open-ended project</td>
<td>30%</td>
</tr>
<tr>
<td>Reading &amp; Discussion Grade</td>
<td>30%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>
### Grading Scale (%)

<table>
<thead>
<tr>
<th>Percentage Range</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>90-100</td>
<td>A</td>
</tr>
<tr>
<td>80 - 89</td>
<td>B</td>
</tr>
<tr>
<td>70 - 79</td>
<td>C</td>
</tr>
<tr>
<td>60 - 69</td>
<td>D</td>
</tr>
<tr>
<td>0 - 59</td>
<td>F</td>
</tr>
</tbody>
</table>

### IV. Grade Dissemination

Graded tests and materials in this course will be returned individually only by request. You can access your scores at any time using the Grade function of Canvas. Please note that scores returned mid-semester are unofficial grades.

### V. Course Policies: Grades

**Late Work Policy:** Late work will not be accepted.

**Extra Credit Policy:** No extra credit will be offered.

**Grades of "Incomplete":** The current university policy concerning incomplete grades will be followed in this course. Incomplete grades are given only in situations where unexpected emergencies prevent a student from completing the course and the remaining work can be completed the next semester. Your instructor is the final authority on whether you qualify for an incomplete. Incomplete work must be finished by the end of the subsequent semester or the “I” will automatically be recorded as an “F” on your transcript.

**Group Work Policy:** Projects 1-4 are individual only. The final project may be done in groups of 2. However, please recognize that a group project must be 2x larger in scale than an individual one. Otherwise, the grading criteria are the same as the group project. Once formed, groups cannot be altered or switched, except for reasons of extended hospitalization.

### VI. Course Policies: Technology and Media

**Email:** E-mail will be used frequently for one-on-one communication. Be sure to check your e-mail frequently.

**Canvas:** Canvas will be used for communication and as a grade book.

**Course Website:** The course website will contain the most accurate and up to date information about the course. Be sure to check the website frequently!

### VII. Course Policies: Student Expectations

**Disability Access:** Students in need of academic accommodations for a disability may consult with Students with Disabilities Services to arrange appropriate accommodations. Students are required to give reasonable notice prior to requesting an accommodation.

**Sexual Misconduct/Sexual Harassment Reporting:** USF is committed to providing an environment free from sex discrimination, including sexual harassment and sexual violence (USF System Policy 0-004). The USF Center for Victim Advocacy and Violence Prevention is a confidential resource where you can talk
about incidents of sexual harassment and gender-based crimes including sexual assault, stalking, and domestic/relationship violence. This confidential resource can help you without having to report your situation to either the Office of Student Rights and Responsibilities (OSSR) or the Office of Diversity, Inclusion, and Equal Opportunity (DIEO), unless you request that they make a report. Please be aware that in compliance with Title IX and under the USF System Policy, educators must report incidents of sexual harassment and gender-based crimes including sexual assault, stalking, and domestic/relationship violence. If you disclose any of these situations in class, in papers, or to me personally, I am required to report it to OSSR or DIEO for investigation. Contact the USF Center for Victim Advocacy and Violence Prevention: (813) 974-5757.

**Attendance Policy:** There is no requirement to attend class. However, much of your grade is derived from your participation in classroom discussions.

**Professionalism Policy:** Per university policy and classroom etiquette; mobile phones, iPods, etc. must be silenced during all classroom lectures. Those not heeding this rule will be asked to leave the classroom/lab immediately so as to not disrupt the learning environment. Please arrive on time for all class meetings. Students who habitually disturb the class by talking, arriving late, etc., and have been warned may suffer a reduction in their final class grade.

**Academic Conduct Policy:** Academic dishonesty in any form will not be tolerated. If you are uncertain as to what constitutes academic dishonesty, please consult the University of South Florida’s Student Handbook for further details. Violations of these rules will result in a record of the infraction being placed in your file and receiving a zero on the work in question AT A MINIMUM. At the instructor’s discretion, you may also receive a failing grade for the course. Confirmation of such incidents can also result in expulsion from the University.

**End of Semester Student Evaluations:** All classes at USF make use of an online system for students to provide feedback to the University regarding the course. These surveys will be made available at the end of the semester, and the University will notify you by email when the response window opens. Your participation is highly encouraged and valued. The results of student feedback are sent to departments and faculty members only after semester grades are already submitted, and student responses are reported only anonymously and in the aggregate to faculty.

**University Writing Center:** The University Writing Center is a free resource for USF undergraduates and graduates. At the UWC, a trained writing consultant will work individually with you on anything you’re writing (in or out of class), at any point in the writing process from brainstorming to editing. Appointments are recommended, but not required. For more information or to make an appointment, visit the UWC website at http://www.lib.usf.edu/writing, stop by LIB-125, or call 813.974.8293.

**Campus Emergencies:** In the event of an emergency, it may be necessary for USF to suspend normal operations. During this time, USF may opt to continue delivery of instruction through methods that include but are not limited to Canvas and email messaging and/or an alternate schedule. It’s the responsibility of the student to monitor the Canvas site for each class for course specific communication, and the main USF, College, and department websites, emails, and MoBull messages for important general information.
VIII. Important Dates to Remember

- August 24: Fall, first day of classes
- August 28: Fall Drop/Add week ends
- September 7: Labor Day
- October 31: Last day to drop with a "W"
- November 11: Veteran's Day
- November 26 & 27: Thanksgiving Holiday
- December 4: Fall, last day of classes
- December 5 - 11: Final Exam Week

Religious Observances: All students have a right to expect that the University will reasonably accommodate their religious observances, practices and beliefs. If you observe religious holidays, you should plan your allowed absences to include those dates.

IX. Schedule

The schedule for this course is quite fluid, thus not listed here. For the most up to date schedule, check the course website (http://www.cspaul.com/wordpress/course-vis-2015/).

X. Course Topics

Design, Data, Visual Encoding, Color, Task and Interaction, Views, Focus + Context, Filtering & Aggregation, Tables, Trees, Graphs, Text Visualization, Sets, Maps, Grids, Isocontours and Isosurfaces, Volume Rendering, Transfer Functions, Vector Fields, Tensor Fields, Visualization Models, and Design Studies