

**UNIVERSITY OF REGINA**  
**Department of Computer Science**  
**CS 837 – Information Visualization**  
**Spring/Summer 2019**

Instructor: **Dr. Orland Hoerber**  
Lectures: **MWF 9:00 – 11:50 AM (CL 417)**  
Dates: **May 6 – 24, June 17 – 24, August 21**  
Webpage: **<http://www.cs.uregina.ca/~hoeber/teaching/cs837/>**  
Email: **orland.hoeber@uregina.ca**

Office Hours: **MWF 1:00 – 3:00 PM on lecture days (other times by appointment)**  
Office: **CW 308.9**

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### **Course Prerequisites**

One of CS 305, CS 315, or CS 325 (or equivalent)

### **Course Objectives**

Information Visualization focuses on the design, development, and study of interactive visualization techniques for the analysis, comprehension, exploration, and explanation of large collections of abstract information. Topics to be covered include principles of visual perception, information data types, visual encodings of data, representations of relationships, interaction methods, and evaluation techniques.

### **Primary Textbook**

Ward, M, Grinstein, G., and Keim, D. Interactive Data Visualization: Foundations, Techniques, and Applications, Second Edition, A K Peters/CRC Press. 2015. (ISBN-13: 978-1482257373)

### **Supplemental Textbooks (Optional)**

Munzner, T. Visualization Analysis and Design, A K Peters/CRC Press. 2014. (ISBN-13: 978-1466508910)

Ware, C. Information Visualization: Perception for Design, 3rd Edition, Morgan Kaufmann, 2013. (ISBN-13: 978-0123814647)

Few, S. Information Dashboard Design, 2nd Edition, Analytics Press, 2013 (ISBN-13: 978-1938377006)

### **Evaluation**

The final grade in the course will be determined as follows:

Participation and contribution	10%
Exam (June 17)	45%
Project (August 21)	45%
<b>Total</b>	<b>100%</b>

\* In order to pass the course, you must pass the exam. Note that the passing grade for a graduate course is 70%.

\* Your final mark may be adjusted by +/- 5%, at the instructor's discretion.

### Course Schedule & Topics (Tentative)

Topic	Date	Topics
0	May 6	<i>Introduction &amp; Syllabus Review</i>
1	May 6	<i>What is Visualization</i> Readings: Ch 1
2	May 8	<i>Data Foundations</i> Readings: Ch 2
3	May 10	<i>Human Perception &amp; Information Processing</i> Readings: Ch 3
4	May 13	<i>Visualization Foundations</i> Readings: Ch 4
5	May 15	<i>Gestalt Principles and Design Practice</i> Readings: Ch 13 and Assigned Papers
6	May 17	<i>Dashboard Design</i> Readings: Few, 2013
	May 20	<i>Victoria Day (University is Closed)</i>
7	May 22	<i>Interaction Concepts and Techniques</i> Readings: Ch 11 & 12

Topic	Date	Topics
8	May 24	<i>Comparing and Evaluating Visualization Techniques</i>  Readings: Ch 14
	June 17	<b><i>Comprehensive Exam on Visualization Fundamentals</i></b>
9	June 19	<i>Space &amp; Time Visualization</i>  Readings: Ch 5, 6, 7
10	June 21	<i>Relationship Visualization</i>  Readings: Ch 9
11	June 24	<i>Text and Document Visualization</i>  Readings: Ch 10
	August 21	<b><i>Project Demos</i></b>  <b><i>Project Report Due</i></b>

### Lectures and Lecture Notes

Lectures will be held three times per week: MWF 9:00 – 11:50 AM in CL 417 during a compressed lecture period from May 6–24 and June 17–24. All lecture notes and assignments will be posted on UR Courses. The lecture notes should not be used as an alternative to attending the lectures or reading the textbook or other assigned papers. It is expected that students will attend the lectures, listen to the explanations and discussions, and take notes about the important information.

### Participation

Attendance will be taken during the first 10 minutes of each lecture. Students will be expected to actively participate in discussions and activities during the lectures. During the first 24 hours after each lecture, students will be expected to post to UR Courses one picture or screenshot of a visualization example that illustrates one of the key concepts from the lecture, along with a brief explanation of why this is a good example of concept. These activities will form the basis for the 10% participation mark.

**Grades**

All grades will be assigned according to the Graduate Calendar: Grading System (<https://www.uregina.ca/gradstudies/current-students/grad-calendar/grading-system.html>):

- 95–100: An exceptional performance.
- 90–94: An outstanding performance.
- 85–89: An excellent performance.
- 80–84: A very good performance.
- 75–79: A good or satisfactory performance.
- 70–74: A minimally acceptable performance or marginal pass.
- 0–69: An unacceptable or failing performance.

**Other Notes and Information**

1. The best way to contact me is via email.
2. You should send class-related email using your University of Regina account only. This will ensure that spam filtering does not keep your email from getting to me.
3. You should check UR Courses and your University email on a regular basis. Important announcements for this class will be made on UR Courses. Other announcements and direct communication will be via email.
4. Students are expected to attend the lectures. If you must skip a lecture, it is your responsibility to find out from classmates what you missed. Note that skipping one lecture is the equivalent to skipping a week's lectures in this compressed format.
5. Although group discussions and study groups are encouraged, projects are to be completed individually (unless explicit permission has been provided for group work). Such discussions should be focused on general concepts, ideas, and lecture materials, and not the specific solutions of any project work. More specifically, this communication should be limited to verbal discussion of concepts, and must never include the sharing of program code or written documentation. For example, if you are working on a project to visualize network data, you may legitimately discuss the various approaches for visually encoding this data, but you must not share any code from the solution. Any close resemblances in the submitted code will be assumed to be the result of cheating. Copying of project work is plagiarism. Allowing your project work to be copied will be treated the same as copying. Please note that the Associate Dean of the Faculty of Graduate Studies will be informed of any such incident, as per university regulations. Refer to the section on Academic Misconduct and Penalties in the General University Calendar.
6. The exam is "closed book", with no additional material permitted. Coats, hats, books, pencil cases, and all other personal items shall be left at the front of the room during examination periods. Cell phones and all other wireless devices must be turned off. The instructor reserves the right to organize student seating during examinations.
7. If you have any issues with the marking of the project or exam in this course, please submit your complaint on paper or via email directly to the instructor (not to the marker). Explain which course component you want investigated, your current mark, and the perceived problem with the marking.