UNIVERSITY OF REGINA
Department of Computer Science

CS 837 – Information Visualization
Fall 2017

Instructor: **Dr. Orland Hoeber**
Lectures: **T/TH 10:00 – 11:15 AM (CL 251)**
Webpage: **http://www.cs.uregina.ca/~hoeber/teaching/cs837/**
Email: **orland.hoeber@uregina.ca**

Office Hours: **W 2:00 – 5:00 PM (other times by appointment)**
Office: **CW 308.25**
Phone: **306-585-4598**

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
Students may choose at the beginning of the course to either complete four assignments (worth 20% each), or undertake a project with five milestones (worth 10% for each of the first four milestones, and 40% for the last milestone). The deadlines for the assignments and project milestones will be the same; students choosing the assignment route will have the option to re-submit any one assignment on the same day of the final project milestone.

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

Assignments or Project	80%
Exam (Oct 19)	20%
Total	**100%**

*** 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)

Week	Date	Topics
0	Sep 7	*Introduction & Syllabus Review*
1	Sep 12/14	*What is Visualization* Readings: Ch 1
2	Sep 19/21	*Data Foundations* Readings: Ch 2
3	Sep 26/28	*Human Perception & Information Processing* Readings: Ch 3 **Sep 28: Assignment 1 (Data Processing & Scatterplots) / Project Milestone 1 (Proposal & Preliminary Literature Review)**
4	Oct 3/5	*Visualization Foundations* Readings: Ch 4
5	Oct 10/12	*Dashboard Design* Readings: Few, 2013 **Oct 12: Assignment 2 (Visual Variables) / Project Milestone 2 (Data Analysis & Wrangling)**
6	Oct 17/19	*Visualization Techniques for Spatial Data* Readings: Ch 5 **Oct 19: Exam on Visualization Fundamentals**

Week	Date	Topics
7	Oct 24/26	*Visualization Techniques for Geospatial & Temporal Data* Readings: Ch 6, 7
8	Oct 31/Nov 2	*Visualization Techniques for Multivariate Data* Readings: Ch 8 **Nov 2: Assignment 3 (Geovisualization) / Project Milestone 3 (Visualization Design & Literature Review)**
9	Nov 7/9	*Visualization Techniques for Trees, Graphs, and Networks* Readings: Ch 9
10	Nov 14/16	*Text and Document Visualization* Readings: Ch 10
11	Nov 21/23	*Interaction Concepts and Techniques* Readings: Ch 10 & 11 **Nov 23: Assignment 4 (Text Visualization) / Project Milestone 4 (Draft Project Report)**
12	Nov 28/30	*Comparing and Evaluating Visualization Techniques* Readings: Ch 13
	Dec 5	**Dec 5: Assignment Re-submission / Project Milestone 5 (Report & Software Submission)**

Lectures and Lecture Notes
Lectures will be held twice per week: T/TH 10:00 – 11:15 AM in CL 251. 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. It is expected that students will attend the lectures, listen to the explanations and discussions, and take notes about the important information.

Assignments
All assignments and project milestone submissions are five minutes before midnight (11:55 PM) on the specified dates, and must be submitted electronically via UR Courses. Late submissions will not be accepted, but the grades for missing assignments may be moved to final assignment/project milestone submission (Dec 5) under exceptional circumstances, and with appropriate documentation.

Grades
All grades will be assigned according to the Graduate Calendar: Grading System (https://www.uregina.ca/gradstudies/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.
5. Although group discussions and study groups are encouraged, assignments and project 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 assignment or 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 given an assignment on visualizing 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 assignments or project work is plagiarism. Allowing your assignments or project work to be copied will be treated the same as copying. Please note that the 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. All exams are “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 any assignment, project milestone, 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.