

# The University of Saskatchewan

Saskatoon, Canada

Department of Computer Science

## CMPT 481/811 – HUMAN-COMPUTER INTERACTION

Course Outline – 2014/2015 Term 1

### 1. COURSE DESCRIPTION

Fundamental theory and practice in the design, implementation, and evaluation of human-computer interfaces.

### 2. COURSE OBJECTIVES

Course components and the evaluation criteria are designed to reflect the learning objectives of the course. The objectives of the course are as follows. That students:

- *Read and critique* the seminal work on human-computer interaction.
- *Practice* the skills of ideation, low-fidelity prototyping, and medium-fidelity prototyping.
- *Evaluate* the usability of a system through techniques that do not involve the end user (e.g., heuristic evaluation) and those that do involve an end user (e.g., controlled user studies).
- *Iterate* on an interface using the results of the evaluation.
- *Implement* an interface, using the skills of ideation, prototyping, and evaluation.
- *Present and communicate* their interface and evaluation through a project report, project presentation, and project video – similar to how human-computer interaction research and case studies are presented in the community.

### 3. INSTRUCTOR

- **Name:** Dr. Regan Mandryk
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### 4. TEACHING ASSISTANT

- **Name:** Kristen Dergousoff
- **Office:** 373 Thorvaldson Bldg
- **Office Hours:** by appointment
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### 5. TEXTBOOK AND LECTURE NOTES

There are no required textbooks for this course although some books are recommended as a reference. All required readings for the course will be posted in PDF format on the course website or handed out in class. Partial lecture notes will be provided online, via the course website; however, lecture notes are not a substitute for attending class. Class time will be used for content presentation, examples, case studies, design exercises, and

group interaction. The visual nature of the course content, combined with the interactive nature of the content presentation, means that class attendance is essential to success in this course.

**Recommended Textbook:** Rogers, Y., Sharp, H., Preece, J. *Interaction Design: Beyond Human-computer Interaction*, 3rd Edition (2011), John Wiley & Sons, ISBN-10: 0470665769 ISBN-13: 978-0470665763

## 6. COURSE WEBSITE

The course website is available via moodle. Course announcements regarding assignments and examinations as well as other information may and will be communicated to the class via this website. The student is responsible for reading this website regularly.

## 7. LECTURE TOPICS

Please see the course schedule for a list of topics and lecture dates. The following topics may be covered but are subject to change.

- Introduction
- Design Principles
  - Pathological Designs
  - The Psychology of Everyday Things
  - GUIs and WIMPs
  - Design Thinking
  - Ideation
- Prototyping
  - Low-fidelity (paper)
  - Medium-fidelity (e.g. Flash, Tcl/tk)
  - High-fidelity (UI Toolkits)
- Evaluating with and without the User
  - Usability Inspection
  - Observational Evaluation
  - Surveys, Interviews, and Focus Groups
  - Quantitative Evaluation
- Human Processing
  - Information Processing
  - Motor Processing
  - Visual Attention
- Graphic Design Principles
  - C.R.A.P. Layout
  - Colour
  - Typography
- Applications
  - Ubiquitous Computing
  - Affective Computing
  - Computer-supported Collaboration
  - Games
  - Tangible Interfaces

In addition, examples and case studies of the aforementioned techniques will be discussed from different domains and applications including Facebook, online dating sites, computer games, blogs, and productivity software. Advanced topics may cover issues not described here.

## **8. CLASS SCHEDULE**

- Lectures: Tuesday and Thursday, 10:00am – 11:20pm, BIOL 125
- There are no tutorials for 481/811.

## **9. COMPUTING FACILITIES**

The programming assignments for this course will be in a variety of languages. Everything needed will be available on computers in the Spinks labs.

## **10. STUDENT EVALUATION**

All 481 students will have the following weighting of course components determine their final grade.

- Midterm Exam           20%
- Assignments           15%
- Project                 30%
- Class participation    5%
- Final Exam             30%

Note that graduate students (811) have a different weighting:

- Midterm Exam           15%
- Assignments           15%
- Project                 50%
- Class participation    5%
- Final Exam             15%

### **10.1.            IMPORTANT REGULATIONS**

- All students must be properly registered in order to attend lectures and receive credit for this course.
- Failure to write the final exam will result in failure of this course.
- To obtain a passing grade in this course, the weighted average of the student's midterm test and final exam grades must be at least 50%.
- To be eligible to write the final examination, the student must have a standing of at least 30% in all other course work (weighted average of all assignments and midterm).

## **11. EXAMINATION REGULATIONS**

A student who misses the midterm test due to illness must contact their instructor by email on the day of the missed test explaining the reason for their absence. The student must subsequently provide appropriate medical documentation to the course instructor at which time the instructor and the student shall discuss how the missed exam will be made up.

A student who cannot attend a midterm test for religious reasons or due to a conflict with another class or examination must inform the instructor at least two weeks prior to the test date so that alternative arrangements can be made.

A student who misses the final examination for any reason, has a conflict with another final examination, or cannot attend the final examination for religious reasons must follow the appropriate procedures outlined in the University of Saskatchewan calendar.

## **12. ASSIGNMENTS**

Assignments will be used as tool to reinforce concepts learned in class. All assignments must be completed individually, unless otherwise stated.

### **12.1. ASSIGNMENT DUE DATES**

There will be a number of small assignments over the course, assigned as the course material dictates. Students will be given a week to complete any assignment that is expected to take more than an hour to complete. Smaller assignments may be due the following class.

### **12.2. SUBMISSION OF ASSIGNMENTS**

Submission of all assignments will occur via moodle.

### **12.3. LATE ASSIGNMENT POLICY**

Absolutely no late assignments will be accepted.

### **12.4. ASSIGNMENT EXTENSIONS**

Absolutely no extensions will be provided for assignment due dates.

## **13. PROJECT**

This course requires completion of a single team project, which has several marked deliverables throughout the term. The goal is to provide students with practical experience in negotiating the iterative stages of the user interface design cycle, and in conducting user centered design. Students will participate in the same team throughout the course. Graduate (811) students will have the option to complete the course project individually.

For the project, students will either:

1. analyze, and then specify, design, prototype and evaluate an improvement to an existing user interface that is demonstrably flawed OR
2. specify, design, prototype, and evaluate an innovative and novel interface OR
3. conduct a small research project in the area of Human-Computer Interaction

There are five stages to the team project, each with a milestone and deliverable. More detail for each component will become available in time. Please consult the course schedule (early and often) for timing of components.

### 13.1. PROJECT COMPONENTS

1. Proposal: Students will propose an interface that could be improved or created based on a preliminary analysis.
2. Ideation, Low-Fi Prototyping and Evaluation without Users: Students will create a design using low-fidelity prototyping techniques, and conduct a low-cost usability test of the prototype.
3. Mid-Fi Prototyping and Evaluation Design: Students will create a detailed evaluation design, and build a testable prototype using the medium-fidelity method of choice.
4. Evaluation and Recommendations: Students will carry out the evaluation, analyze the results, discuss findings and make recommendations in a project report.
5. Presentation: Students will deliver a presentation to the class, which will include a video and/or demo component.

### 13.2. PROJECT GRADING SCHEME

Each project component will be graded and given a weight of the total project grade (30% of grade). If option c (research project) is chosen, these weights can be adjusted.

1. Proposal (10%)
2. Ideation, Low-fidelity Prototype and Evaluation without Users (20%)
3. Medium-Fidelity Prototype (in-class demo) and Evaluation Plan (30%)
4. Evaluation and Recommendations (final report) (30%)
5. Class Presentation (10%)

### 13.3. TEAM PEER EVALUATION

Group work is beneficial for the learning experience, but has the drawback that some members of a group may not carry their weight in terms of group participation. To mitigate this factor, students will perform peer evaluations of their project group members. These evaluations will be used to scale the project grade.

### 13.4. SUBMISSION OF PROJECT

Submission instructions for projects will be given in the descriptions of individual project components. Programming components will be submitted using moodle.

### 13.5. LATE PROJECT POLICY

Absolutely no late project components will be accepted for grading. As the project components build upon each other, feedback will be provided on late projects, but the grade for the late component will be zero.

### 13.6. PROJECT EXTENSIONS

Absolutely no extensions will be given for project components.

## 14. CLASS PARTICIPATION

Class time will be used for content presentation, examples, case studies, design exercises, and group interaction. The visual nature of the course content, combined with the interactive nature of the content presentation, means that class attendance is essential to success in this course. All in-class activities are improved when there is

sufficient class participation. As such, 5% of the final grade will depend on class participation and will be assigned by the course instructor in consultation with the course teaching assistant.

## **15. DEPARTMENT POLICY ON ACADEMIC HONESTY**

Students are expected to be academically honest in all of their scholarly work, including course assignments and examinations. Academic honesty is defined and described in the Department of Computer Science Statement on Academic Honesty (<http://www.cs.usask.ca/undergrad/honesty.php>) and the University of Saskatchewan Website (<http://www.usask.ca/secretariat/student-conduct-appeals/StudentAcademicMisconduct.pdf>).

Please note that new policies and procedures governing Non-Academic Misconduct have come into effect: <http://www.usask.ca/secretariat/student-conduct-appeals/StudentNon-AcademicMisconduct.pdf>.