

CMPT 381.3 - Implementation of Graphical User Interfaces

Department of Computer Science – University of Saskatchewan

Course Description

Advanced introduction to concepts and structures used to develop GUIs in software, focusing on building user interfaces. Covers the fundamentals of GUI toolkits including input, widgets, layout, events, model-view-controller architectures, and two-dimensional graphics.

On the Web

The Moodle page for the course (<https://moodle.cs.usask.ca/course/view.php?id=339>) will be the main location for all materials related to 381.

Prerequisite

CMPT 270

Brief Learning Objectives

When finished this course you will be able to:

- Build graphical user interfaces in several development environments
- Develop interactive systems that use widgets, layout managers, event handlers, and 2D graphics
- Build systems using the model-view-controller pattern
- Implement common interaction techniques such as selection, drag and drop, and undo

Course Meeting Information

Lecture: Tuesdays and Thursdays, 10:00am – 11:20am, THORV 129

Lab: Tuesdays, 11:30am – 12:20pm, Spinks S320

Instructor Information

Instructor: Matthew Miller

Contact: matthew.miller@usask.ca

Office Location and Hours: Thorvaldson 373; hours by appointment (send email)

Tutorial Leader: Jason Bowey

Contact: jason.bowey@usask.ca

Student Evaluation

Grading Scheme:

- Assignments: 25%
 - Midterm exam: 15%
 - Project: 20%
 - Final exam: 40%
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- Assignments: approximately one every two weeks in January and February
 - Midterm: in class, February 25 (tentative)
 - Project: start in February, due at end of term

Textbook

Required:

- Olsen, D. R. Building Interactive Systems : principles for human-computer interaction, (2009), Course Technology, Boston, MA. ISBN-10: 1423902483 ISBN-13: 9781423902485 (available in the U of S bookstore; electronic versions also available).

Recommended:

- The U of S library has several electronic reference books for the different development environments (Java FX and Android). Additional reference materials will be made available on the course website.

Course Topics

- Intro to UI development and interactive systems
- GUI Architecture: the layered model, MVC, and the interaction cycle
- Paradigms for specifying UIs: programmatic and declarative
- Widgets, Layout, and Events
- Building basic UIs in different environments: Java FX and Android
- 2D graphics: canvases, points, lines, shapes, and transformations
- Model-View-Controller pattern and implementation
- Threading for GUIs
- Basic interactions: select, scroll, drag and drop, cut/copy/paste, undo
- Advanced interaction: e.g., ink, gestures, zoom & pan
- Other topics as determined by class interest

Policies

Late Assignments

No late assignments will be accepted or marked without medical reason, and no extensions will be given.

Missed Assignments

Missed assignments will be given a grade of 0%.

Missed Examinations

1. Students who miss an exam should contact the instructor as soon as possible. If it is known in advance that an exam will be missed, the instructor should be contacted before the exam.
2. "A student who is absent from a final examination due to medical, compassionate, or other valid reasons, may apply to the College of Arts and Science Undergraduate Student's Office for a **deferred** exam. **Application must be made within three business days of the missed examination** and be accompanied by supporting documents."
(<http://artsandscience.usask.ca/undergraduate/advising/strategies.php>)

Incomplete Course Work and Final Grades

"When a student has not completed the required course work, which includes any assignment or examination including the final examination, by the time of submission of the final grades, they may be granted an extension to permit completion of an assignment, or granted a deferred examination in the case of absence from a final examination.

Extensions past the final examination date for the completion of assignments must be approved by the Department Head, or Dean in non-departmentalized Colleges, and may exceed thirty days only in unusual circumstances. The student must apply to the instructor for such an extension and furnish

satisfactory reasons for the deficiency. Deferred final examinations are granted as per College policy.

In the interim, the instructor will submit a computed percentile grade for the class which factors in the incomplete coursework as a zero, along with a grade comment of INF (Incomplete Failure) if a failing grade.

In the case where the student has a passing percentile grade but the instructor has indicated in the course outline that failure to complete the required coursework will result in failure in the course, a final grade of 49% will be submitted along with a grade comment of INF (Incomplete Failure).

If an extension is granted and the required assignment is submitted within the allotted time, or if a deferred examination is granted and written in the case of absence from the final examination, the instructor will submit a revised assigned final percentage grade. The grade change will replace the previous grade and any grade comment of INF (Incomplete Failure) will be removed.

A student can pass a course on the basis of work completed in the course provided that any incomplete course work has not been deemed mandatory by the instructor in the course outline and/or by College regulations for achieving a passing grade." (<http://policies.usask.ca/policies/academic-affairs/academic-courses.php>)

For policies governing examinations and grading, students are referred to the Assessment of Students section of the University policy "Academic courses: class delivery, examinations, and assessment of student learning" (<http://policies.usask.ca/policies/academic-affairs/academic-courses.php>)

Academic Honesty

The University of Saskatchewan is committed to the highest standards of academic integrity and honesty. Students are expected to be familiar with these standards regarding academic honesty and to uphold the policies of the University in this respect. Students are particularly urged to familiarize themselves with the provisions of the Student Conduct & Appeals section of the University Secretary Website and avoid any behavior that could potentially result in suspicions of cheating, plagiarism, misrepresentation of facts and/or participation in an offence. Academic dishonesty is a serious offence and can result in suspension or expulsion from the University.

All students should read and be familiar with the Regulations on Academic Student Misconduct (<http://www.usask.ca/secretariat/student-conduct-appeals/StudentAcademicMisconduct.pdf>) as well as the Standard of Student Conduct in Non-Academic Matters and Procedures for Resolution of Complaints and Appeals (<http://www.usask.ca/secretariat/student-conduct-appeals/StudentNon-AcademicMisconduct.pdf>) Academic honesty is also defined and described in the Department of Computer Science statement on Academic Honesty (<http://www.cs.usask.ca/students/academic-honesty/index.php>).

For more information on what academic integrity means for students see the Student Conduct & Appeals section of the University Secretary Website at:

<http://www.usask.ca/secretariat/student-conduct-appeals/forms/IntegrityDefined.pdf>

Examinations with Disability Services for Students (DSS)

Students who have disabilities (learning, medical, physical, or mental health) are strongly encouraged to register with Disability Services for Students (DSS) if they have not already done so. Students who suspect they may have disabilities should contact DSS for advice and referrals. In order to access DSS programs and supports, students must follow DSS policy and procedures. For more information, check

<http://students.usask.ca/health/centres/disability-services-for-students.php>, or contact DSS at 966-7273 or dss@usask.ca.

Students registered with DSS may request alternative arrangements for mid-term and final examinations. Students must arrange such accommodations through DSS by the stated deadlines. Instructors shall provide the examinations for students who are being accommodated by the deadlines established by DSS.