COEN/ELEC 390: Engineering Team Design Project

Winter 2014/15

Instructor: Dr. William E. Lynch

Office: EV 5.163; Office Hours: Tuesdays 3 - 5pm.

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Lectures: Wednesdays and Fridays, 10:15 - 11:30, H-431

Tutorials: Mondays:17:45-19:35 **H831, H849 (computer rooms)**

MB1.210 (class room)

Tutorial Leader: Amine Mhedhbi, m.amine.mhedhbi@gmail.com

COEN 390/ELEC 390 Project Specialist: Tyler Trezise, tyler@ece.concordia.ca

Course Objectives

The course offers students knowledge and experience in team-based design and implementation, as well as documentation and presentation of an Android App. The course has two main aspects to it: lectures and classroom activities as well as requirements elicitation, product specification, technical design, implementation and documentation. Students, individually and as part of small teams, are required to manage their time intelligently in order to follow and fulfill the demands of both the theoretical and practical parts of the course. Upon completion of the course, successful students should be better able to:

(a) Elicit and document the requirements of a customer
(b) Generate a product specification, and possibly a product prototype
(c) Implement design ideas and build realistic Android App using the provided platforms
(d) Complete a design project within a given time frame and budget
(e) Carry out some basic software testing and software documentation
(f) Participate and possibly lead a small engineering team
(g) Gain confidence in applying technical abilities within a realistic setting
(h) Prepare and present written documentation (e.g., specifications report & user manual)
(i) Prepare and present oral presentations to colleagues

Course Textbook

Required

- Programming Android, Z. Mednieks, L. Dornin, G. B. Meike, M. Nakamura, O'Reilly Media, Inc, 2nd Edition, 2012
- Essential Scrum, Kenneth S. Rubin, Addison-Wesley, 2013.

Not Required, but useful

- Managing Software Requirements, a Use Case Approach by Dean Leffingwell & Don Widrig, Addison-Wesley, 2003.
- Product Design and Development, K.T. Ulrich, S.D. Eppinger, McGraw-Hill Irwin, 5th edition, 2012.
- Reference textbook: Guidelines to Professional Practice (freely available on-line) by the OIQ, 1999. ISBN: 2980218618.

Course Homepage

The course has two on-line resources. Technical and other information are accessible through Moodle at "My Concordia Portal". Make sure you a VALID and ACTIVE e-mail address at myConcordia.

Course Software

The Eclipse IDE with the Android Plug-in have already been installed.

Lectures

The lectures begin in the first week of term. The main lectures will be over by March, but we will still occasionally meet in March, including for the Midterm exam.

Tutorials, reading assignments and Workshop problems

There will be reading assignments from the course text book, as follows:

Reading Assignment 1, due Monday Jan 11, beginning of tutorial, pages 33-94
(All of Chapter 2 (Java for android) Chapter 3 (The ingredients of an android application) up to and including Static Application Resources and Context).
Reading Assignment 2, due Monday Jan 18, beginning of tutorial, pages 94-126.
(Rest of Chapter 3.)
Reading Assignment 3, due Monday Jan 25, beginning of tutorial, pages 171-202. (chapter 6 (Building a view))

For these you should read the sections of the book required. While reading you should make at least 4 pages of rough notes or jottings while you do the reading. This can be anything related to the assigned reading: summary, questions, noting similarity to other courses, etc. These must be hand written, not photocopied. In addition you should write 5 sentences (full grammatical sentences) that summarize what you read. Your 4 pages and 5 sentences should be handed in at the tutorial. The best two of these three will form 5% of your final mark. Each student should do the reading assignments on their own.

There will also be workshop problems given in the tutorial. Together these will make up 10% of your final grade.

You must also submit at least one expectation of originality form. Until this form arrives your assignments will not be marked.

Midterm Exam

In March we will schedule a midterm exam based on the lecture material. It will be counted for 10% of your final grade.

Project

This is a team project. Teams should have four members and at least one person with reasonably good programming experience. Teams should not include more than one computer engineering student.

Note that **every single student must program a significant piece of the project.**

Students may form their own teams. If you are forming your own team you should send me (via email) the team members by Jan 15. Indicate in that email which student(s) have reasonably good programming experience. I'll have to approve all teams, so until you hear back from me it won't be official.

If you would rather that I place you on a team (perhaps to meet new people in your class), you need to nothing. Everyone who has not been part of a submitted team will be put on teams by me after January 19.

Information on the project is given in the accompanying handout.

Each group will keep a blog. It must be handed in with each milestone.

Grading & Awards

The grading scheme is as follows

Tutorial Reading Assignments	5%
Workshop problems	10%
Midterm Exam	10%
Milestone 1 – Mission statement	5%
Milestone 2 – Requirements document	15%
Sprint 1	12%
Sprint 2	12%
Sprint 3	12%
Final submissions	19%

The best projects will be recognized in an awards ceremony in April or May.

Graduate Attributes

Five graduate attributes will be assessed in this course, this year. This has no impact, whatever, on your course grade. These are:

Design. An ability to design solutions for complex, open-ended engineering problems and to design systems, components or processes that meet specified needs with appropriate attention to health and safety risks, applicable standards, and economic, environmental, cultural and societal considerations. (Measured in each milestone and sprint)

Communications Skills. An ability to communicate complex engineering concepts within the profession and with society at large. Such abilities include reading, writing, speaking and listening, and the ability to comprehend and write effective reports and design documentation, and to give and effectively respond to clear instructions. (Written components. Simulation to be used for Research Methods. Final Oral Presentation).

Use of engineering tools: An ability to create, select, apply, adapt, and extend appropriate techniques, resources, and modern engineering tools to a range of engineering activities, from simple to complex, with an understanding of the associated limitations. (Use of eclipse and android tool box)

Impact of engineering on society and the environment: An ability to analyze social and environmental aspects of engineering activities. Such ability includes an understanding of the interactions that engineering has with the economic, social, health, safety, legal, and cultural aspects of society, the uncertainties in the prediction of such interactions; and the concepts of sustainable design and development and environmental stewardship. (Essays on ethical components in Milestone 2 and Final submission).

Life-long learning: An ability to identify and to address their own educational needs in a changing world in ways sufficient to maintain their competence and to allow them to contribute to the advancement of knowledge. (Development of user stories, simulation work)

List of Services

- Undergraduate Advisor: Dr. Glenn Cowan.
- ENCS Student Academic Services: 2nd floor EV Building.
- Concordia Counselling and Development (career, psychological and student learning services): http://www.concordia.ca/offices/cdev.html/
- Concordia Library Citation and Style Guides: http://library.concordia.ca/help/howto/citations.html
- Advocacy and Support Services (Access Centre for Students with Disabilities, Aboriginal Student Resource Centre, Student Parents Centre, Student Advocate Program): http://www.concordia.ca/offices/advocacy.html
- Student Success Centre (math-related support, pure, applied and social science support, become a better wordsmith, student success mentors, awards and scholarships, learning support, jobs and careers): http://www.concordia.ca/students/success.html
- Academic Integrity: http://www.concordia.ca/students/academic-integrity.html
- Financial Aid and Awards: http://www.concordia.ca/offices/faao.html
- Health Services: http://www.concordia.ca/students/health.html