SOEN 6441 – Winter 2019
Advanced Programming Practices
Course Outline

Instructor	**Amin Ranj Bar** – Office: EV_3-301 E-mail: amin.ranjbar@concordia.ca Office Hours: Thursday, 20:15-21:15 by appointment only
Lectures	Thursday 17:45-20:15 at H-937
Coordinator	**Joey Paquet**
Lab Instructors & Markers	→ Please see the website for information on lab instructors/tutors/markers as well as lab/tutorials times and locations.

COURSE DESCRIPTION

Problems of writing and managing code. Managing complexity: programming process. Pragmatic Programming. Coding conventions, software documentation. Software configuration management. Advanced debugging techniques: program tracing, dynamic inspection and tools. Testing: coding techniques for testing software. Multithreading concurrency and distributed programming. Multi-language programming. A project. Laboratory: two hours per week.

Rationale:
Most students coming out of introductory programming courses know how to write simple programs written in a specific programming language. Other more advanced courses show them how to use the more advanced features of the language, thus reaching for a complete understanding of the syntactical constructs of a specific programming language. Industrial programming requires a lot more diversified skills than simple mastery of language syntax. Industrial programmers have to know how manage the complexity of their coding activities, install and use libraries, create reusable, documented, fault free and fault tolerant code. This course aims at broadening the knowledge of the students to these concepts, techniques and tools that are complementary to what is taught in standard programming courses.

Course Objective:
Improving the practical programming skills of students by emphasizing real-life aspects of programming that are not dealt with in regular introductory and advanced programming courses. Practical mastery of techniques and tools for the writing of superior quality code and complementary programming artifacts such as inline documentation, design patterns, and automated testing infrastructure.

Prerequisite Knowledge:
Although this course does not officially have course prerequisites, it is taken for granted that the students are already proficient programmers that master the object-oriented programming paradigm. The lectures, exercises, examinations, and completion of the project will necessitate pre-existing programming skills. This course is not meant to teach you how to program, but rather how to extend your programming skills and apply them in a team project.

TEXTBOOK AND OTHER SUPPORT MATERIALS

Walter Savitch. Absolute Java. Addison Wesley. Sixth Edition, 2015.

Additional research papers will be posted as recommended/required reading. Great thanks to professor Paquet for providing his lecture notes.
Note: Check the website (Moodle) for important notices that you must read, lecture notes, projects, etc.

WORKLOAD AND GRADING

- Project (3 deliveries): 10% + 10% + 20%
- Midterm Exam: 20%
- Final Exam: 40%

To pass the course, you should pass each component of the course (project and the exams). You must have at least 50% total mark, as well as in the combined examinations mark in order to pass the course.

1. Project: The project is to be tackled by teams of 5 members. It is divided into 3 practical assignments related to the project. Each assignment includes the delivery of an operational subset (i.e. and increment or build) of the final project. The project consists of a large program whose development involves most of the topics discussed in the lectures. Each build is graded independently of the other builds, following a grading scheme given prior to the due date. Each build will be presented orally in a practical demonstration in the course laboratory. All project assignments are marked as a team, and all team members get the same grades.

2. Exams: The exams are closed-book standard pen-and-paper exams whose goal is to individually test the comprehension of the material taught in class. The final examination covers the materials from the entire semester, including lectures, research papers, and the project and will be conducted on a date determined by the university. Passing the exams is necessary for passing the course. There is no calculator allowed in the exam. In addition, students must not have a cell phone or other electronic device on their person or anywhere in their work area during the exams. As a general rule for exams, you need to show all your work (just the final result is not enough). Any rough work on question paper will not be considered.

Grading Scheme: There are no pre-set cutoff points for the final grades; the cutoff points will be decided based on an assessment of difficulty level, class performance, fairness, and instructor's wisdom from teaching and grading the course in the past. That is, there is no definite rule for translation of number grades to letter grades.

Policy: You may ask for a make-up exam or later submission of assignments ONLY under a university-approved condition, such as sickness with a doctor's note. Other events such as a business travel are not excused. You should make the request for a mark-up exam or a later submission of an assignment

before the date of the corresponding exam and the deadline for the corresponding assignment, respectively. In particular for exams, you need to inform me at least one week in advance, unless it is an emergency. Note that, your request is not accepted, until you receive an explicit confirmation from me. Do keep the confirmation as a proof. No exception.

Laboratory: The laboratory instructor(s) will be there to help you on the project, most particularly on the use of the tools and libraries to be used for the implementation. The three project deliveries will be held in the laboratory.

WEBSITE AND OTHER RESOURCES

All announcements to the students will be made through the myconcordia portal. Thus it is very important for all students to regularly read e-mail coming into the address they have provided to the portal. All course material, as well as the weekly schedules and due dates, will be provided on the course web site (see the address above).

PLAGIARISMAND ACADEMIC FRAUD

Students should be aware of the University's academic integrity and code of conduct. In particular, please pay attention to the parts concerning cheating, plagiarism, and possible consequence of violating this code. Sharing codes, design diagrams, algorithms, etc. amongst teams or taken from elsewhere (without proper citation) is not permitted. No need to mention that one learns little from copying others' work.

Academic Integrity:
http://www.concordia.ca/students/academic-integrity.html
http://www.concordia.ca/students/academic-integrity/offences.html

Plagiarism:
https://www.concordia.ca/students/academic-integrity/plagiarism.html

Social Media Sites:
Please note that the Copyright Act applies to course material (coursepacks, handouts, original or manipulated images etc.). As such, students should be aware that it is illegal to post such material on any website or social media site such as Facebook or YouTube, to sell it, to share it, or to include it in a personal portfolio, as this will constitute copyright infringement and is punishable by law. For more information about the University's policy on social media:

http://www.concordia.ca/social/handbook.html

CONCORDIA SECURITY

Please add 514-848-3717 into their cellphone. This will permit quick contact when needed with Concordia Security, who are familiar with the location of buildings at Concordia and can direct emergency services to the right location. For more information, please visit:

https://www.youtube.com/watch?v=14VLX0mtojw

Please note: In the event of extraordinary circumstances beyond the University's control, the content and/or evaluation scheme in this course is subject to change.