Concordia University
Concordia Institute for Information Systems Engineering

INSE 6250/2/UU - Quality Methodologies for Software (Fall 2011) (4 credits)

1. General Information

- Course: INSE 6250/4/UU – Quality Methodologies for Software (4 credits)
- Lectures: Tuesdays, 17:45 – 20:15, **H-615**
- Instructor: Jamal Bentahar, *Ph.D., P.Eng.*, Concordia Institute for Information Systems Engineering, ENCS.
- Office: EV7.630, extension 5382, bentahar@ciise.concordia.ca
- Office Hours: Thursdays from 10:00 a.m. to 12:00 p.m.
- Course Website: http://www.ciise.concordia.ca/~bentahar/inse6250.html
  You can use this web site to get lecture notes, useful links, assignments, and other useful information. It is highly advised to visit the web site regularly.
  User: **Password**:

2. Course Description

- This course presents the main quality methodologies used within software engineering process. It introduces software engineering and the main quality issues for software. The following issues will be covered: software engineering, quality methodologies, software metrics, meta-models, specification languages, software verification, software modeling, design for six sigma (DFSS) for Software, etc. Students will discover various concepts and techniques developed in recent research about software engineering and quality methodologies and learn to apply them through lectures, readings, assignments, and team project. Several materials from different sources will be used, particularly scientific papers.
- Prerequisites: INSE 6210, COMP 5541 or equivalent. **Good knowledge of mathematics and logics will be very helpful**

3. Learning Outcomes

- By the end of this course, students should be able to:
  1. Understand software engineering and software process principles.

2. Understand and apply quality methodologies for Software.
3. Understand and apply verification techniques for software, particularly model checking.

4. Schedule

- Week 1: Introduction to Software Engineering and Software Process.
- Week 2: Introduction to Quality Methodologies for Software.
- Weeks 3 and 4: Formal Methods for Software.
- Weeks 5, 6, and 7: Formal Specification and Verification (Midterm).
- Weeks 8 and 9: Binary Decision Diagrams.
- Week 10: Agent-based Software Engineering.
- Week 11: Trust in Multi-Agent Systems.
- Week 12: Specification Languages (Z, B, SDL).
- Week 13: Project Presentations and Discussions.

5. Course Materials

- Textbook:
  - Lecture Notes + Papers
- Readings:
  - Quality Software Project Management
    - Authors: Robert T. Futrell, Donald F. Shafer, Linda I. Shafer.
    - Publisher: Prentice Hall, 2007.
  - Principles of Model Checking
    - Authors: Christel Baier and Joost-Pieter Katoen.
    - Publisher: MIT Press, 2008.
    - A Preliminary Version is **Available online from the course web page**.
  - The B-Book: Assigning Programs to Meanings
    - Authors: J. R. Abrial.
    - Publisher: Cambridge University Press, 2005.

6. Assignments and Grading

1. Assignments (2): 15%
2. Midterm Exam (closed book): 25%
3. One Team Project (2~3 members, presentation + report) 25%
4. Final Exam (closed book): 35%

- **Details:**

1. Homework Assignments (2): must be done in groups of 2. Due dates are: October 11, 2011 and November 29, 2011.

Late assignments suffer a penalty rate of 20% per day, up to 5 days (weekends count towards the 5 days). Assignments that are more than 5 days late are penalized by 100%. The solutions will be posted on the course website. **No submissions will be allowed after the solutions are published.**
Submit the signed <u>Expectations of Originality form</u> with each homework assignment.
2. **Midterm Exam:** will focus on the first 7 Lectures.
3. **Final Exam:** will take place at the end of the semester. Students should not make any specific arrangements to leave the city until the final exam date is posted.

*   Failing Grade:
Plagiarism, absenteeism, lack of preparation, and lack of effort will result in a failing grade.

7. Academic Code of Conduct

<u>Academic Integrity</u>

Any form of cheating, plagiarism, personation, falsification of a document as well as any other form of dishonest behaviour related to obtaining academic gain or the avoidance of evaluative exercises committed by a student is an academic offence under the Academic Code of Conduct and **may lead to severe penalties up to and including suspension and expulsion.**
As examples only, you are not permitted to:
*   Copy from anywhere without indicating where it came from
*   Let another student copy your work and then submit it as his/her own
*   Hand in the same assignment in more than one class
*   Have unauthorized material or devices in an exam. Note that you do not have to be caught using them – just having them is an offence
*   Copy from someone's else exam
*   Communicate with another student during an exam
*   Add or remove pages from an examination booklet or take the booklet out of an exam room
*   Acquire exam or assignment answers or questions
*   Write an exam for someone else or have someone write an exam for you
*   Submit false documents such as medical notes or student records
*   Falsify data or research results
You are subject to the Academic Code of Conduct. Take the time to learn more at
http://provost.concordia.ca/academicintegrity/

8. Student's Responsibilities

*   Students are expected to attend every class. Some material may only be covered in class and not made available on the course website. Students are expected to read the assigned material and to actively participate in class discussions.
*   Students are expected to be respectful of other people's opinions and to express their own views in a calm and reasonable way. Disruptive behaviour will not be tolerated.
*   Students are expected to be familiar with the Code of Rights and Responsibilities:
    http://rights.concordia.ca

- If you cannot attend class for any reason, unforeseen or not, you are to come and talk or write to me as soon as possible.

9. Student Services

- **Concordia Counselling and Development** offers career services, psychological services, student learning services, etc.
  http://cdev.concordia.ca
- **The Concordia Library Citation and Cycle Guides:**
  http://library.concordia.ca/help/howto/citations.html
- **Advocacy and Support Services:**
  http://supportservices.concordia.ca
- **Student Transition Centre:**
  http://stc.concordia.ca
- **New Student Program:**
  http://newstudent.concordia.ca
- **Office for Students with Disabilities:**
  http://supportservices.concordia.ca/disabilities/
- **The Academic Integrity Website:**
  http://provost.concordia.ca/academicintegrity/