

## Concordia University

### Concordia Institute for Information Systems Engineering

#### INSE 6250/4/UU - Quality Methodologies for Software (Winter 2008)

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**Time:** Tuesday, 17h45 – 20h15  
**Classroom:** CL-242  
**Office hours:** Wednesday, 14h00 – 16h00 or by appointment (Office: EV.7.630)

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**Instructor:** Dr. J. Bentahar  
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Tel: 514-848-2424 Ext. 5382

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**Course Web:** <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.

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**Textbooks:** 1) *Quality Software Project Management*  
Robert T. Futrell, Donald F. Shafer, Linda I. Shafer  
Prentice Hall, 2002  
ISBN: 0-13-091297-2

**Suggested Readings** This book covers several issues related to software quality. Some important chapters are: process overview, selecting software developments life cycles, developing the software requirements specification, introduction to software engineering, software metrics, and validation and verification.

2) *The B-Book: Assigning Programs to Meanings*  
J. R. Abrial  
Cambridge University Press, 1996  
ISBN: 0-521-49619-5

**Suggested Readings** This book is a reference in the B method for software specification. It covers a comprehensive breadth of this method and its applications.

3) *Principles of Model Checking*  
J-P. Katoen  
Formal Methods and Tools Group, University of Twente  
**Available online from the course web page**

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**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, design for six sigma (DFSS) for Software, software metrics, meta-models, software modeling, specification languages, software verification, 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, assignment, and team project. Several materials from different sources will be used, particularly scientific papers.

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**Prerequisites:** INSE 6210, COMP 5541 or equivalent.  
Good knowledge of mathematics and logics will be helpful.

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**Requirements:**

- One individual/group assignment
- One in-class midterm exam (closed book)
- One in-class final exam (closed book)
- One team project (2~3 members, presentation + report)

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**Grading:**

- One assignment: 20%
- One in-class midterm exam: 25%
- One in-class final exam: 25%
- Project (presentation + report): 15% + 15% = 30%

The assignment will be graded based on **clarity** and **comprehensiveness**. The project will be graded based on **originality**, **relevance of the proposed solution**, and **contribution**. In-class exams will test students' knowledge and ability to understand, analyze, and synthesize concepts.

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**Important dates:**

- Project proposal: February 05, 2008
- Assignment: February 12, 2008
- Midterm exam: February 26, 2008
- Project presentation: April 01, 2008
- Final exam: April 08, 2008
- Project report: April 10, 2008

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**Useful Links:**      The Software Quality Page  
<http://www.swquality.com/users/pustaver/index.shtml>  
Software QA and Testing Resource Center  
<http://www.softwareqatest.com/>

                                 The B-Method  
<http://www.b-core.com/ONLINEDOC/BMethod.html>

                                 Formal Methods  
<http://vl.fmnet.info/>

                                 Software Quality Institute (SQI)  
<http://lifelong.engr.utexas.edu/sqi/index.cfm>

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**Submission:**      All assignments are at the beginning of class. Late assignments will incur a penalty of 20% deduction (up to 100%). No points will be given to the assignment submitted 5 days after the due date.

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**Policies:**      Cheating and plagiarisms will be very seriously considered and handled according to the Concordia Academic Code of Conduct (can be found in the graduate student handbook) without exception. Please note the schedule of the exams. A makeup test will be given only in the case of a serious illness or emergency. You must contact the instructor before the exam. Only written and proved documentations are accepted for verification purposes.

**Tentative Schedule:** The table below provides a brief summary of some of the material that will be covered during the term. The schedule may change slightly.

<b>Lecture</b>	<b>Topic</b>	<b>Event</b>
1	Introduction to Software Engineering and Software Process	
2	Introduction to Quality Methodologies for Software	
3	DFSS for Software	
4	Formal Methods for Software	
5	Formal Specification and Verification	Project Proposal <b>(February 5)</b>
6	Model Checking and Binary Decision Diagrams	Assignment <b>(February 12)</b>
7	Midterm	Midterm <b>(February 26)</b>
8	Agent-based Software Engineering (1)	
9	Agent-based Software Engineering (2)	
10	Specification Languages (Z, B, SDL)	
11	Software Modeling	
12	Project Presentations	Project <b>(April 01)</b>
13	Final Exam	Final Exam <b>(April 08)</b>