

Concordia Institute for Information Systems Engineering

INSE 6260/4/UU - Software Quality Assurance (Winter 2012)

Instructor: Dssouli, R.

Time: Thursdays, 17h45 – 20h15

Classroom: FG C070

Office hours: Thursdays, 13h00 – 15h00 or by appointment (office: EV 6.225/ **7.639**)

<http://users.encs.concordia.ca/~dssouli/teaching.html>

Textbook:

1) *Software Quality Assurance: From Theory to Implementation*

Daniel Galin

Addison Wesley, 2004

ISBN: 0-201-70945-7

This book covers several issues related to software quality assurance. Some important chapters are: software quality challenge, what is software quality, software quality factors, and software testing.

Reference books

2) *Metrics and Models in Software Quality Engineering*

Stephen H. Kan

Addison-Wesley, 2004 (available online)

ISBN: 0-201-72915-6

This book is a reference in software metrics. It covers a comprehensive breadth of measurement theory and software quality metrics.

3) *Foundation of Software Testing*

Aditya P. Mathur

Pearson

Description: This course presents the main issues of quality assurance for software engineering. It introduces software quality challenges and factors and the main quality considerations for software. The following issues will be covered: quality assurance, quality factors, components of a software quality assurance system, contract review, software development and quality plans, activities and alternatives, integration of quality activities in a project lifecycle, reviews, software inspection, software verification, testing processes, static analysis, control-flow analysis, data-flow analysis, control-flow testing, loop testing, data-flow testing, transaction flow testing, domain testing, type-based analysis, dynamic analysis, usage models, operational profiles, result and defect analysis, reliability, performance analysis, maintenance and reverse engineering, case tools and software quality assurance. Students will discover various concepts and techniques developed in recent research about software quality engineering and learn to apply them through lectures, readings, assignment, 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.

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Requirements:

- 2 individual assignments
- One in-class midterm exam (closed book)
- One in-class final exam (closed book)
- One team project (4 members, demonstration + report)

Grading: Final course grades will be based on the following components:

Components	percentage
Assignment(s)	15%
Midterm	25%
Final	30%
Project	30%

Important dates:

- Assignment: February TBA, 2012
- Midterm exam: March 01, 2012
- Project demonstration: March 29, 2012
- Final exam: To be scheduled by the university

Useful Links: The Software Quality Page

<http://www.swquality.com/users/pustaver/index.shtml>

Software QA and Testing Resource Center

<http://www.softwareqatest.com/>

Formal Methods

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

Software Quality Institute (SQI)

<http://lifelong.engr.utexas.edu/sqi/index.cfm>

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.

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.

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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.

Lectures	Topics	Events
1	Introduction to Software Quality Assurance	
2	Software Quality Factors, Models and Standards	
3	Inspection: Verification and Validation	
4	Introduction to Testing	
5	Test Assessment	
6	Testing Techniques	Assignment 1
7	Reachability Analysis	
8	Break	February 20-26th
9	Midterm	March 1st
10	Structural and Mutation Testing	
11	SDL	
12	Software Metrics	Assignment 2
13	Project Presentations	March 29th
14	Final Exam	TBA