Instructor
Dr. Issa Traore
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Office Hours
Days: Monday, Thursday
Time: 11:30am-12:30pm
Location: EOW 415

Course Objectives
- Introduce fundamental notions of software quality and the techniques used to build and check quality in software systems.
- Introduce the notion of enterprise computing and industrial software, and their quality constraints
- Quantitative assessment of software quality through quality attributes and metrics
- Advanced quality control techniques through in-depth coverage of critical software attributes, including functional testing, reliability testing, security testing, and performance testing
- Apply the principles of modern software engineering practices, such as DevOps and Site Reliability Engineering (SRE)

Learning Outcomes
By the end of this course, students should have a good grasp of:
- software quality metrics and models
- functional software testing techniques
- software reliability analysis models and techniques
- software performance testing techniques
- software security testing techniques
- DevOps and SRE practices, with an emphasis on automation, continuous delivery and deployment

Syllabus
The following syllabus is subject to the time available and may change during the term. Some of the topics may not be covered.

Chapter 1. Outline of Software Quality Engineering
Discuss the characteristics of industrial and mission-critical software systems. Define the notion of software quality, and emphasize the importance of building quality software systems. Give an overview of quality attributes and related quality control techniques.

Chapter 2: Introduction to DevOps

Chapter 3. System Testing Techniques

Introduce application system testing and general functional testing strategy. Testing based on extended use case model. Introduction of a number of techniques to quantify, classify and analyze discovered defects.

Chapter 4: Software Quality Metrics

Presentation of quality management models; Use of quality models and data for in-process quality management and to guide software testing. Service level definition and measurement. Availability metrics.

Chapter 5. Software Performance Testing

Introduction of software performance criteria and metrics. Performance test planning and targets. Software performance testing process, approach, and tools.

Chapter 6. Software Security Bugs

Review of top software security weaknesses and vulnerabilities through concrete examples. Understanding and use of software security defect repositories: common weakness enumeration (CWE) and common vulnerability enumeration (CVE).

Chapter 7. Software Security Testing


Chapter 8: Software Reliability Engineering


Chapter 9: Software Performance Modeling

Present advanced software performance engineering techniques, models, and tactics.

A-Section(s): A01 / CRN 30755
A02 / CRN 30756

B01 Mon 4:30-6:20 pm
B02 Thu 11:30am – 1:20 pm
Location: B 238
TA: Mr. Paulo Quinan (quinan@uvic.ca)
Mr. Ujwal Reddy
(ujwal1995reddy@gmail.com)
Days: Monday, Thursday
Time: 10:00-11:20am
Location: ELL 060

Required Text
Title: Course Pack SENG 426
(available Uvic Bookstore)
Author:
Publisher:
Year:

Optional Text
Title:
Author:
Publisher:
Year:

References:
1. Software Quality Engineering, Jeff Tian, Wiley, 2005
7. Lectures Notes/Slides: on Course Space

Assessment:
Attendance/Class participation: 4%
Project: 40% (Part I: 5%; Part II: 5%; Part III: 10%; Part IV: 10%; Part V: 10%)
Mid-term Exam: 20% Date: July 4, 2019
Final: 36%

Note:
The final grade obtained from the above marking scheme for the purpose of GPA calculation will be based on the percentage-to-grade point conversion table as listed in the current Undergraduate Calendar.
https://web.uvic.ca/calendar2019-05/undergrad/info/regulations/grading.html
There will be no supplemental examination for this course.

Note to students: Students who have issues with the conduct of the course should discuss them with the instructor first. If these discussions do not resolve the issue, then students should feel free to contact the Chair of the Department by email or the Chair’s Assistant to set up an appointment.

Accommodation of Religious Observance:
https://web.uvic.ca/calendar2019-05/undergrad/info/regulations/religious-observanc.html
Policy on Inclusivity and Diversity:  
https://web.uvic.ca/calendar2019-05/general/policies.html

Standards of Professional Behaviour: You are advised to read the Faculty of Engineering document Standards for Professional Behaviour, which contains important information regarding conduct in courses, labs, and in the general use of facilities.  
https://www.uvic.ca/engineering/assets/docs/professional-behaviour.pdf

Cheating, plagiarism and other forms of academic fraud are taken very seriously by both the University and the Department. You should consult the entry in the current Undergraduate Calendar for the UVic policy on academic integrity.  
https://web.uvic.ca/calendar2019-05/undergrad/info/regulations/academic-integrity.html

Equality: This course aims to provide equal opportunities and access for all students to enjoy the benefits and privileges of the class and its curriculum and to meet the syllabus requirements. Reasonable and appropriate accommodation will be made available to students with documented disabilities (physical, mental, learning) in order to give them the opportunity to successfully meet the essential requirements of the course. The accommodation will not alter academic standards or learning outcomes, although the student may be allowed to demonstrate knowledge and skills in a different way. It is not necessary for you to reveal your disability and/or confidential medical information to the course instructor. If you believe that you may require accommodation, the course instructor can provide you with information about confidential resources on campus that can assist you in arranging for appropriate accommodation. Alternatively, you may want to contact the Centre for Accessible Learning located in the Campus Services Building.

The University of Victoria is committed to promoting, providing, and protecting a positive, and supportive and safe learning and working environment for all its members.

Course Lecture Notes: Unless otherwise noted, all course materials supplied to students in this course have been prepared by the instructor and are intended for use in this course only. These materials are NOT to be re-circulated digitally, whether by email or by uploading or copying to websites, or to others not enrolled in this course. Violation of this policy may in some cases constitute a breach of academic integrity as defined in the UVic Calendar.

Sexualized Violence Prevention and Response at UVic  
UVic takes sexualized violence seriously, and has raised the bar for what is considered acceptable behaviour. We encourage students to learn more about how the university defines sexualized violence and its overall approach by visiting www.uvic.ca/svp. If you or someone you know has been impacted by sexualized violence and needs information, advice, and/or support please contact the sexualized violence resource office in Equity and Human Rights (EQHR). Whether or not you have been directly impacted, if you want to take part in the important prevention work taking place on campus, you can also reach out:

- **Where:** Sexualized violence resource office in EQHR; Sedgewick C119
- **Phone:** 250.721.8021
- **Email:** svpcoordinator@uvic.ca
- **Web:** [www.uvic.ca/svp](http://www.uvic.ca/svp)