

CONCORDIA UNIVERSITY

DEPARTMENT OF  
COMPUTER SCIENCE AND SOFTWARE ENGINEERING

COMP 354

FALL 2021

INTRODUCTION TO SOFTWARE ENGINEERING

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**INSTRUCTOR**

<b>Name:</b>	R. Jayakumar
<b>Office Hours:</b>	Zoom meetings by appointment
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<b>Discussions:</b>	In-class on Tuesdays 11h45 to 13h00 Zoom meetings on Thursdays 11h45 to 13h00

**COURSE OBJECTIVES AND PLAN**

The objective of this course is to understand the software development process and the tools and techniques used to properly design software systems. The course will cover the following.

*The Software Process:* Process models, agility, human aspects of software engineering.

*Software Modeling:* Requirements modeling, architectural design, component-level design, user experience design, pattern-based design.

*Software Quality and Security:* Software quality assurance, software security engineering, software testing, software configuration management, software metrics and analytics.

*Managing Software Projects:* Project management concepts, creating a viable software plan, risk management.

**PREREQUISITE**

The stated prerequisite is COMP 352 (Data Structures and Algorithms). To follow this course, students must have a good understanding of discrete mathematics, data structures, algorithms and programming experience.

**TEXT BOOK**

Roger Pressman and Bruce Maxim, *Software Engineering: A Practitioner's Approach*, 9<sup>th</sup> Edition, McGraw Hill, 2020, ISBN13: 9781259872976.

**COURSE DELIVERY**

During this Fall 2021 term, due to the COVID-19 pandemic, this course will be delivered in hybrid mode: tutorials, labs and some lectures will be in-person, and other lectures, quizzes and final exam will be online. All the lectures will be recorded and the recorded lecture videos for a week will be posted on the Moodle course page by the end of the previous week. These lecture videos can be accessed through the "COMP 354 Recorded Lecture Videos" link

in the Moodle course page. Students are expected to learn from these recorded lectures and bring their questions for discussion during the in-person and/or Zoom online class discussions (which they can join using the “COMP 354 Virtual Class Discussions” link in the Moodle course page). To ensure timely learning of the material, there will be Moodle quizzes throughout the term on these lecture materials and the feedback from these quizzes will also be discussed during the Zoom class discussions.

The practical work/learning will be through three team assignments and a team project. Each team will have about 6 members who should communicate and discuss each of the assignments and project and the submissions should indicate the contributions by each team member and will be evaluated accordingly. The Teaching Assistants (TAs) will provide necessary tutorials for the practical work. After a practical work (assignments and project) is submitted, it will be evaluated by the markers during the tutorial and lab times.

At the end of the term, there will be a timed final exam on Moodle scheduled by the exam office. The marks from all these quizzes, assignments, project, and the final exam will be used to decide the final grade of a student according to the grading scheme below.

### ASSIGNMENTS AND PROJECT

There will be three assignments and a project. ***Students must do (and get non-zero marks in) at least two of the three assignments and the project to pass the course.*** The assignments will be on the different phases (requirements gathering, architectural design, and testing) of a simple software system and the project will be to implement the designed software and test it accordingly. Thus, students will learn many of the software development methodologies, tools, and techniques through *team assignments*. The *team project* will involve using the methodologies and techniques learned from the assignments to develop a simple software system. ***Assignments and projects must be electronically submitted on the due date and late submissions will not be accepted. All submissions should (would be assumed to) adhere to the ENCS Expectations of Originality.***

### GRADING SCHEME

Assignments:	20%
Project:	20%
Quizzes:	30%
Final Exam:	30%

***There will be five surprise (unannounced) quizzes throughout the term. There will not be any make up quizzes, so you will lose the marks for any missed quiz. Students must do (and get non-zero marks in) at least three of the five quizzes to pass the course.*** In order to pass the course, a student must achieve an acceptable level of performance (usually, 70% of the class average) both in the practical work (assignments + project) and in the examinations (quizzes + final).

Please note that there is no standard relationship between the numerical percentages and the final letter grades given in this course, except that higher numerical percentages correspond to better grades. The final grade will be based on the total mark in comparison to the class average.

Students should be aware of the University's Academic Code of Conduct as specified in Section 17.10 on pages 58–64 of the 2021–2022 Undergraduate Calendar, especially the parts concerning cheating, plagiarism, and the possible consequence of violating this code.

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

***TENTATIVE SCHEDULE***

WEEK	TOPIC	MATERIAL
1	Introduction to Software Development	Chapter 1
2–3	The Software Process	Chapters 2–5
3–4	Software Requirements	Chapters 7–8
4–6	Software Architecture and Design	Chapters 9–14
6–7	Software Quality Assurance	Chapters 15–17
8	Software Security	Chapter 18
9–10	Software Testing	Chapters 19–21
11	Software Configuration Management	Chapter 22
12–13	Software Project and Risk Management	Chapters 24–26