Computer Science (COMP) 410

Software Engineering (Revision 4)

Status:	Replaced with new revision, see the **course listing** for the current revision
Delivery mode:	**Individualized study online**
Credits:	3
Area of study:	Science
Prerequisites:	1) **COMP 206** or **COMP 268** and 2) **COMP 272** or instructor's permission, which is based on 1) the student's skills in a high-level programming language such as C, C++, or Java; and 2) the student's knowledge and familiarity with data structures.
Precluded:	None
Challenge:	COMP 410 is not available for challenge.
Faculty:	**Faculty of Science and Technology**
Notes:	Students who are concerned about not meeting the prerequisites for this course are

encouraged to contact the **course coordinator** before registering.

Overview

Computer Science 410 Software Engineering focuses on the principles and knowledge of software engineering. It covers the approaches taken in developing large programming projects, including requirements analysis, specification, design (e.g., top-down modularization), coding (e.g., structured programming), debugging and testing, maintenance, and thorough documentation as illustrated by examples and papers from current literature. This course will prepare students for working in teams to build quality software, and it provides the necessary hands-on practice for those who wish to enhance their knowledge base.

COMP 410 is designed for people who work or are about to work in any aspect of software development. It is also intended for people who have managerial responsibility for software development and anyone who is interested in how complex software systems are designed and built.

Outline

- Unit 1: The Scope of Software Engineering
- Unit 2: Software Life-Cycle Models
- Unit 3: The Software Process
- Unit 4: Development Teams
- Unit 5: Software Engineering Tools
- Unit 6: Testing
- Unit 7: From Modules to Objects
- Unit 8: Reusability and Portability
- Unit 9: Planning and Estimating

- Unit 10: Requirements
- Unit 11: Classical Analysis
- Unit 12: Object-Oriented Analysis
- Unit 13: Design
- Unit 14: Implementation
- Unit 15: Post-delivery Maintenance
- Unit 16: More on Unified Modeling Language (UML)
- Unit 17: Emerging Technologies

Learning outcomes

Upon successful completion of this course, you should be able to

- manage object-oriented and classical software construction projects including planning, scheduling, and risk assessment/management.
- author software requirement documents with the appropriate content.
- author formal specifications for software systems.
- demonstrate proficiency in rapid software development techniques.
- identify specific components of a software design that can be targeted for reuse.
- demonstrate proficiency in software development cost estimation.
- author software-testing plans.
- explain the direction of software engineering and technologies of the future.

Evaluation

To **receive credit** for COMP 410, students must meet the following criteria:

- a course composite grade of at least 50%
- a grade of at least 50% on the final examination
- an average grade of 50% on assignments

- a grade of at least 50% on the participation mark.

The weighting of the composite grade is as follows:

Activity	Weight
Assignment 1	25%
Assignment 2	25%
Assignment 3	10%
Marked Quizzes	5%
Participation	10%
Final Exam	25%
Total	**100%**

The **final examination** for this course must be requested in advance and written under the supervision of an AU-approved exam invigilator. Invigilators include either ProctorU or an approved in-person invigilation centre that can accommodate online exams. Students are responsible for payment of any invigilation fees. Information on exam request deadlines, invigilators, and other exam-related questions, can be found at the **Exams and grades** section of the Calendar.

To learn more about assignments and examinations, please refer to Athabasca University's **online Calendar** .

Materials

Digital course materials

Links to the following course materials will be made available in the course:

Schach, Stephen R. *Object-Oriented and Classical Software Engineering*, 8th ed. New York: McGraw-Hill, 2011.

Other Resources

All other learning resources will be available online.

Special Course Features

COMP 410 can be completed on the student's workplace or home computer.

COMP 410 encourages and requires interaction and discussion between students through discussion forums.

Important links

- **Academic advising**
- **Program planning**
- **Request assistance**
- **Support services**

Athabasca University reserves the right to amend course outlines occasionally and without notice. Courses offered by other delivery methods may vary from their individualized study counterparts.

Opened in Revision 4, December 12, 2013

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View **previous revision**