



UNIVERSITY OF CALGARY
FACULTY OF SCIENCE
DEPARTMENT OF COMPUTER SCIENCE
COURSE OUTLINE

1. **Course:** SENG 301: Software Analysis and Design

Lecture Sections:

L01, TR 9:30-10:45, ICT 121, Robert Walker, ICT 546, 210-9593, walker@ucalgary.ca

Office Hours: TR 12:00-13:00

Course Website: D2L

Computer Science Department Office, ICT 602, 220-6015, cpsc@cpsc.ucalgary.ca

2. **Prerequisites:** CPSC 319 or 331

(<http://www.ucalgary.ca/pubs/calendar/current/computer-science.html#3620>)

3. **Grading:** The University policy on grading and related matters is described in sections F.1 and F.2 of the online University Calendar. In determining the overall grade in the course the following weights will be used:

Assignments (4)	35%
Laboratory Exercises (15)	15%
Midterm Exam	20%
(In-Class Thursday November 17 th , 2016)	
Final Examination	30%

This course **will** have a Registrar's Scheduled Final Exam.

Special Regulations affecting the Final Grade: To obtain an overall grade of C- or better in the course, the student must obtain a C- or better on the weighted combination of the examination components.

4. **Missed Components of Term Work:** The regulations of the Faculty of Science pertaining to this matter are found in the Faculty of Science area of the Calendar. Section 3.6. It is the student's responsibility to familiarize themselves with these regulations. See also Section E.6 of the University calendar.
5. **Scheduled Out-of-Class Activities:** REGULARLY SCHEDULED CLASSES HAVE PRECEDENCE OVER ANY OUT-OF-CLASS-TIME ACTIVITY. If you have a clash with this out-of-class activity, please inform your instructor as soon as possible so that alternative assignments can be arranged.

6. **Course Materials:**

Object Oriented Software Engineering: Practical Software Development Using UML and Java 2nd Edition, Lethbridge and Laganière, *McGraw Hill* (Required)

How to Use Objects, Gast, *Addison-Wesley* (Recommended)

Code Complete 2nd Edition, McConnell, *Microsoft* (Recommended)

Clean Code: A handbook for Agile Software Craftsmanship, Martin, *Prentice Hall* (Recommended)

Online Course Components:

Lecture slides, assignments, notes and lab instructions will be on D2L.

7. **Examination Policy:** Students may bring a single, US letter sized sheet of paper to examinations ("cheat sheet") as a memory aid. Students should also read the Calendar, Section G, on examinations.
8. **Approved Mandatory and Optional Course Supplemental Fees:** None.

9. **Writing across the Curriculum Statement:** In this course, the quality of the student's writing in the weighted components of the course will be a factor in the evaluation of these components. See also Section E.2 of the University Calendar.
10. **Human Studies Statement:** Students will be expected to participate as subjects or participants in projects. See also Section E.5 of the University Calendar.
11. **OTHER IMPORTANT INFORMATION FOR STUDENTS:**
- a) **Misconduct:** Academic misconduct (cheating, plagiarism, or any other form) is a very serious offense that will be dealt with rigorously in all cases. A single offence may lead to disciplinary probation or suspension or expulsion. The Faculty of Science follows a zero tolerance policy regarding dishonesty. Please read the sections of the University Calendar under Section K, Student Misconduct to inform yourself of definitions, processes and penalties.
 - b) **Assembly Points:** In case of emergency during class time, be sure to FAMILIARIZE YOURSELF with the information on assembly points which can be found in each classroom and building.
 - c) **Student Accommodations:** Students needing an Accommodation because of a Disability or medical condition should contact Student Accessibility Services in accordance with the Procedure for Accommodations for Students with Disabilities available at http://www.ucalgary.ca/policies/files/policies/procedure-for-accommodations-for-students-with-disabilities_0.pdf. Students needing an Accommodation in relation to their coursework or to fulfil requirements for a graduate degree, based on a Protected Ground other than Disability, should communicate this need, preferably in writing, to the Associate Head of Computer Science.
 - d) **Safewalk:** Campus Security will escort individuals day or night (<http://www.ucalgary.ca/security/safewalk/>). Call 403-220-5333 for assistance. Use any campus phone, emergency phone or the yellow phones located at most parking lot pay booths.
 - e) **Freedom of Information and Privacy:** This course is conducted in accordance with the Freedom of Information and Protection of Privacy Act (FOIPP). As one consequence, students should identify themselves on all written work by placing their name on the front page and their ID number on each subsequent page. For more information see also <http://www.ucalgary.ca/secretariat/privacy>
 - f) **Student Union Information:** VP Academic (403) 220-3911 suvpaca@ucalgary.ca SU Faculty Rep (403) 220-3913 science1@su.ucalgary.ca, science2@su.ucalgary.ca and science3@su.ucalgary.ca, Student Ombuds Office: (403) 220-6420 ombuds@ucalgary.ca, <http://ucalgary.ca/provost/students/ombuds>
 - g) **Internet and Electronic Device Information:** You can assume that in all classes that you attend your cell phone should be turned off unless instructed otherwise. All communications with other individuals via laptop computers, cell phones or other devices connectable to the internet in not allowed during class time unless specifically permitted by the instructor. If you violate this policy you may be asked to leave the classroom. Repeated abuse may result in a charge of misconduct.
 - h) **U.S.R.I.:** At the University of Calgary feedback provided by students through the Universal Student ratings of Instruction (USRI) survey provides valuable information to help with evaluating instruction, enhancing learning and teaching, and selecting courses (www.ucalgary.ca/usri). Your responses make a difference – please participate in USRI surveys.

Department Approval _____ Date _____

Associate Dean's Approval for
out of regular class-time activity: _____ Date: _____

Associate Dean's Approval for
Alternate final examination
arrangements: _____ Date: _____

A signed copy of this document is kept on file in the Computer Science main Office ICT 602

SENG 301 Syllabus

Tentative Topics Covered

Review of object-orientation
Structural and behavioural modelling
Requirements analysis
Testing
Test case selection
Test automation
Test coverage
Design
Design principles
Design patterns
Design analysis
Debugging
Moving from requirements to design
Moving from design to implementation
Refactoring
Planning for change
APIs, frameworks, and libraries
Software processes

Learning Outcomes:

By the end of the course: students will:

- Implement a small to medium-scale software system conforming to a design.
- Design a small- to medium-scale software system that conforms to a given description.
- Implement and to execute an automated test suite.
- Design and to justify a test plan.
- Analyze the strengths and weaknesses of a given design.
- Model a small- to medium-scale software system to represent the relevant aspects in a specified context.
- Modify an existing design and its implementation in order to achieve a specified effect.