



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

1. **Course:** CPSC 501, Advanced Programming Techniques -- Fall 2017

*Lecture 01:* (TR, 15:30-16:45 in KNB126)

| Instructor Name | Email                    | Phone        | Office  | Hours             |
|-----------------|--------------------------|--------------|---------|-------------------|
| Leonard Manzara | manzara@cpsc.ucalgary.ca | 403-220-3518 | ICT 703 | MWF 11:00 - 12:00 |

*Course Site:*

D2L: CPSC 501 L01-(Fall 2017)-Advanced Programming Techniques

Department of Computer Science: ICT 602, 403 220-6015, cpsc@cpsc.ucalgary.ca

2. **Prerequisites:**

See section [3.5.C](#) in the Faculty of Science section of the online Calendar.

CPSC 349 or 449.

3. **Grading:**

The University policy on grading and related matters is described in [F.1](#) and [F.2](#) of the online University Calendar. In determining the overall grade in the course the following weights will be used:

| Component(s) | Weighting % |
|--------------|-------------|
| Assignments  | 50          |
| Midterm Exam | 25          |
| Final Exam   | 25          |
|              |             |
|              |             |

Each piece of work (reports, assignments, quizzes, midterm exam(s) or final examination) submitted by the student will be assigned a percentage score. The student's average percentage score for the various components listed above will be combined with the indicated weights to produce an overall percentage for the course, which will be used to determine the course letter grade.

The conversion between a percentage grade and letter grade is as follows;

| Letter Grade             | A+ | A  | A- | B+ | B  | B- | C+ | C  | C- | D+ | D  |
|--------------------------|----|----|----|----|----|----|----|----|----|----|----|
| Minimum Percent Required | 95 | 90 | 85 | 80 | 75 | 70 | 65 | 60 | 55 | 50 | 45 |

**To achieve an overall grade of C- or better in the course, you must achieve a minimum grade of C- or better in the final exam and complete all assignments.**

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 in [Section 3.6](#). It is the student's responsibility to familiarize himself/herself with these regulations. See also [Section E.3](#) of the University Calendar

5. **Scheduled out-of-class activities:**

There are no out-of-class activities scheduled for this course.

6. **Course Materials:**

*Refactoring*, Martin Fowler, Addison-Wesley (required)

*Java Reflection in Action*, Forman and Forman, Manning Publications (required)

## 7. Examination Policy:

Open book, no electronic aids of any kind are permitted.

Students should also read the Calendar, [Section G](#), on Examinations.

## 8. Approved Mandatory and Optional Course Supplemental Fees:

There are no mandatory or optional course supplemental fees for this course

## 9. Writing across the Curriculum Statement:

See Section E.2 of the University Calendar.

## 10. Human studies statement:

Students will not participate as subjects or researchers in human studies.

## 11. OTHER IMPORTANT INFORMATION FOR STUDENTS:

- a. **Misconduct:** Academic misconduct (cheating, plagiarism, or any other form) is a very serious offence 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](#).
- c. **Academic Accommodation Policy:** 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 [procedure-for-accomodations-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 Undergraduate Affairs of the Department of Computer Science, Nathaly Verwaal by email [nmverwaa@ucalgary.ca](mailto:nmverwaa@ucalgary.ca) or phone 403-220-8485.
- d. **Safewalk:** Campus Security will escort individuals day or night ([www.ucalgary.ca/security/safewalk/](http://www.ucalgary.ca/security/safewalk/)). Call [403-220-5333](tel: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 [www.ucalgary.ca/legalservices/foip](http://www.ucalgary.ca/legalservices/foip).
- f. **Student Union Information:** [VP Academic](#), Phone: [403-220-3911](tel:403-220-3911) Email: [suvcaca@ucalgary.ca](mailto:suvcaca@ucalgary.ca). SU Faculty Rep. Phone: [403-220-3913](tel:403-220-3913) Email: [sciencerep@su.ucalgary.ca](mailto:sciencerep@su.ucalgary.ca); Student Ombudsman, Email: [suvcaca@ucalgary.ca](mailto:suvcaca@ucalgary.ca)
- 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. Also, communication with other individuals, via laptop computers, Blackberries or other devices connectable to the Internet is not allowed in 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. **Surveys:** At the University of Calgary, feedback through the Universal Student Ratings of Instruction ([USRI](#)) survey and the Faculty of Science Teaching Feedback form provides valuable information to help with evaluating instruction, enhancing learning and teaching, and selecting courses. Your responses make a difference - please participate in these Surveys.
- i. **SU Wellness Center:** The Students Union Wellness Centre provides health and wellness support for students including information and counselling on physical health, mental health and nutrition. For more information, see [www.ucalgary.ca/wellnesscentre](http://www.ucalgary.ca/wellnesscentre) or call [403-210-9355](tel:403-210-9355).



## Course Outcomes

1. By the end of this course, students should be able to explain the concepts of code refactoring, including how refactoring improves the design of software systems.
2. By the end of this course, students should be able to refactor object-oriented code using a disciplined process that uses version control and unit testing.
3. By the end of this course, students should be able to describe the basic concepts of reflection as embodied in modern programming languages.
4. By the end of this course, students should be able to create a program that does object introspection using the reflective capabilities of the Java programming language.
5. By the end of this course, students should be able to design and implement a program that does reflection serialization and deserialization using the reflection API of the Java programming language.
6. By the end of this course, students should be able to explain the techniques used to optimize software performance, including how to measure performance gains.
7. By the end of this course, students should be able to optimize a computationally expensive digital signal-processing program, and create a report that describes the process they went through to accomplish this.