

University of Ottawa
School of Electrical Engineering and Computer Science (SEECs)
ITI 1121. Introduction to Computing II Winter 2012

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Course Description

Object-oriented programming. Abstraction principles: information hiding and encapsulation. Linked lists, stacks, queues, binary search trees. Iterative and recursive processing of data structures. Virtual machines.

Prerequisite: ITI1120, 3 hours of lecture per week, 3 hours of lab per week, 3 credits.

Time Schedule

- LEC1 Monday 11:30 - 13:00 SMD 430
- LEC2 Thursday 13:00 - 14:30 SMD 430
- Laboratory 1 Saturday 09:00 - 12:00 STE 2060
- Laboratory 2 Monday 19:00 - 22:00 STE 0130
- Laboratory 3 Friday 11:30 - 14:30 STE 2060

Professor's details

Ph.D. Candidate: Oana Frunza
SITE Room 5-010
Email: ofrunza@site.uottawa.ca
Office Hours: Monday 15:30-16:30

TAs

- (Laboratory 1 Saturday 09:00 - 12:00 STE 2060)
Office Hours:
Email:
- (Laboratory 2 Monday 19:00 - 22:00 STE 0130)
Office Hours:
Email:
- (Laboratory 3 Friday 11:30 - 14:30 STE 2060)
Office Hours:
Email:

- Office Hours:
Email:

Objectives

- Further training in Java and programming concepts, particularly object-oriented programming and linked data structures;
- Thorough treatment of basic data structures (in particular, stacks, queues, linked lists, and binary search trees);
- A basic understanding of virtual machines;
- A solid foundation for further studies in computer science.

Outline

1. Object-oriented programming and encapsulation;
2. Polymorphism and inheritance;
3. Polymorphism and interface;
4. Abstract data type;
5. Stacks implementations and algorithms;
6. Queues implementations and algorithms;
7. Linked implementations, linked lists;
8. Recursive list processing;
9. Binary search trees.

Course information

The first lecture will be held on Monday, January 9. Laboratories start Friday, January 13. Information about the schedules, tutorials, lecture notes, etc. can be found on Virtual Campus.

Evaluation

There will be a midterm test, a final examination, as well as four assignments. The midterm test will be held on Saturday March 3rd from 10 to 12:00, STE A 0-150. The assignments will be announced in class and posted on the course web site. Every assignment counts and constitutes an excellent preparation for the final.

According to the Faculty policy, for the students that cannot attend the midterm, the mark of the final examination will be used in place of the midterm.

Each assignment must be done individually by each student or teams of no more than two students. Copying of assignments, even with superficial changes, is a serious form of academic fraud and will not be tolerated. The possible penalties for academic fraud are listed in the Faculty of Engineering undergraduate calendar and will be applied to all students involved. Consult the following web site:

- <http://web5.uottawa.ca/admingov/regulations.html#r71>
- <http://www.uottawa.ca/plagiarism.pdf>

Further information regarding plagiarism will be discussed in the first lecture.

The Faculty of Engineering manages the dates and registration for the final, supplemental and deferred examinations. In the Faculty of Engineering, for level 1000 courses, students obtaining the grade E are entitled to write a supplemental examination (normally held in the first half of July). In that case, the

marking scheme below is applied, except that the mark of the supplemental replaces that of the final examination.

Marking scheme

- Assignments = 30 marks
- Laboratories (participation + quizzes) = 10 marks
- Midterm test = 20 marks
- Final examination = 40 marks

Calculation of your final grade,

1. if (Midterm test + Final examination) < 30 then

$$\text{Grade} = \frac{\text{Midterm test} + \text{Final examination}}{60} \times 100$$

2. else

$$\text{Grade} = \text{Assignments} + \text{Laboratories} + \text{Midterm test} + \text{Final examination}$$

If you have a valid reason (e.g. medical) for missing the midterm test, then the final examination mark will also be used as the midterm mark.

Textbooks

The following textbook is available at the circulation desk of Morisset library (2005 edition only) and the university bookstore. On the course Web site you will find the suggested readings for each lecture.

- E. Koffman and P. Wolfgang (2010) *Data Structures: Abstraction and Design Using Java, Second Edition*. Wiley, 832 pages. (ISBN: 978-0-470-12870-1)

Here is a free textbook that covers most of the material presented in class.

- Java Structures: Data Structures in Java for the Principled Programmer by Duane A. Bailey
- www.cs.williams.edu/~bailey/JavaStructures/Book.html

Students that got ITI1120 credited and don't have a good command of Java may want to buy the following textbook.

- Java Precisely, 2nd Edition by Peter Sestoft. MIT Press, August 2005. (ISBN: 978-0-262-69325-7)

Software

DrJava