University of Saskatchewan

Department of Computer Science
176 Thorvaldson Building
110 Science Place, Saskatoon, SK, S7N 5C9, Canada
Telephine: (306) 966-4886, Facsimile: (306) 966-4884

Course Syllabus
CMPT 270: Developing Object-Oriented Systems

Catalogue Description

Object-oriented programming. The use of modeling, abstractions, patterns, and GUIs to design and build a good OO system. Unit testing to ensure that it works. Applications of the techniques to interactive systems.

Prerequisite(s):	CMPT 115 or 117; and 3 credit units of 100-level calculus or STAT 245 or equivalent.
Note:	Students with credit for CMPT 250 may not take this course for credit.
Lectures:	Tu/Th 2:30pm-3:50pm — Arts 263
Tutorials:	T01 (M 9:00-10:20am) — Spinks S320
	T03 (W 4:00-5:20pm) — Spinks S320
	T05 (Tu 4:00-5:20pm) — Spinks S320
Website:	Moodle

Instructor Information

Instructor	Ian Stavness
Contact:	Email: ian.stavness@usask.ca — **please include CMPT270 in Subject line**
	Phone: 306-966-7995
Office Hours:	Location: Thorv 377.4,
	Hours: please schedule by email
Tutorial Leader:	Paul Tuhin (tup500@mail.usask.ca)
Teaching Assistants:	Yaowen Chen (yac508@mail.usask.ca)
	Sawgat Ibne Mahmud (mdm179@mail.usask.ca)

Course Objectives

CMPT 270 exposes students to object-oriented programming concepts with the following objectives:

- Learn how to program in the object-oriented programming language Java.
- Learn the basics of GUIs, graphics, and concurrent programming in Java.
- Learn the techniques of unit testing.
- Learn the basic principles of designing and building a large software system.

Student Evaluation

Grading Scheme

Assignments	25%
Midterm Exam	20%
Final Exam	55%
Total	100%

Assignments

The course assignments are structured around developing a large object-oriented software system in a sequence of stages. The tentative assignment schedule is as follows :

Assignment 1	5%	due Sept. 19	Finding object types and their features
Assignment 2A	5%	due Sept. 26	Getting Started With Java, Part A
Assignment 2B	18%	due Oct. 3	Getting Started With Java, Part B
Assignment 3	18%	due Oct. 17	Inheritance and Data Structures
Assignment 4	18%	due Oct. 31	Three-Layer Architecture
Assignment 5	18%	due Nov. 21	Graphic User Interfaces
Assignment 6	18%	due Dec. 5	Model-View-Controller Architecture

Criteria That Must Be Met To Pass

Students must achieve an total mark of 50% or greater to pass the course.

Attendance Expectation

Regular attendance is expected.

Final Exam Scheduling

The Registrar schedules all final examinations, including deferred and supplemental exams. Students are advised not to make travel arrangements for the exam period until the official exam schedule has been posted. **Note: All students must be properly registered in order to attend lectures and receive credit for this course.**

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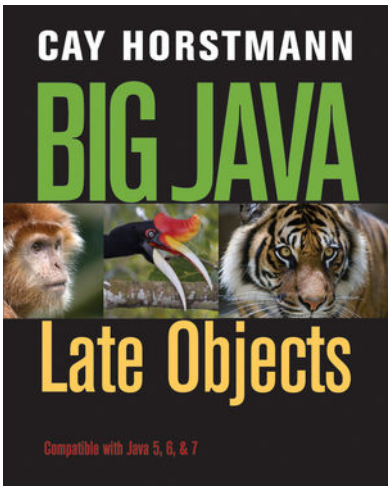
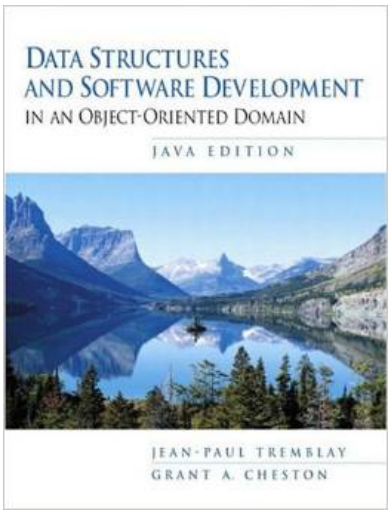
Textbook Information

Required Text

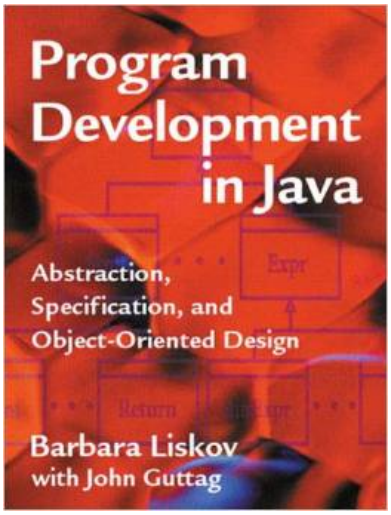


"Big Java Late Objects" 1st Edition by Cay S. Horstmann (Wiley, 2012).

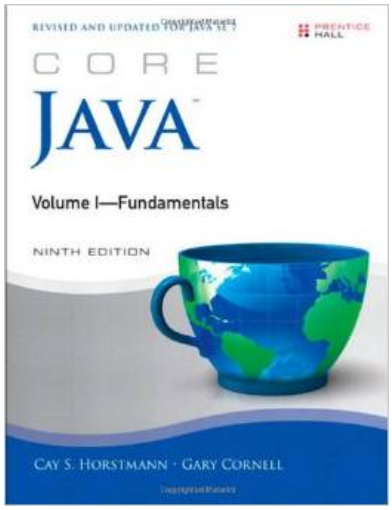
Recommended Texts



"Data Structures and Software Development in an Object Oriented Domain" Java Edition by Jean-Paul Tremblay and Grant A. Cheston (Prentice Hall, 2002). ***** Required excerpts will be posted to Moodle *****



"Program Development in Java: Abstraction, Specification, and Object-Oriented Design" 1st Edition by Barbara Liskov (Addison-Wesley, 2012).



"Core Java Volume I – Fundamentals" 9th Edition by Cay S. Horstmann (Prentice Hall, 2012).

Lecture Schedule

Topic	**Subtopics**
Introduction	overview of course objectives and evaluation
Java Basics	syntax, types, arrays, compiling, using Eclipse, style
Objects and Classes	classes, interfaces, constructors, members, methods
Inheritance and Interfaces	subclasses, this, super, Object, polymorphism
Testing basics	notation, black-box testing, special case testing, boundary value testing, regression testing, bottom-up vs. top-down testing
Exception handling	exceptions, throw, try/catch
Review Linear Data Structures	Java Collections, Set, Map, ArrayList, Iterators, Stack, Queue
More Java	typing, Java Generics, static variables and methods
Object-Oriented Design	decomposition, abstraction, locality, cohesion, coupling, information hiding, classification of classes, two-layer architecture, command pattern, data model, design manual, design reviews
Graphical User Interfaces	frames, events and listeners, components, layouts, AWT, Swing
Graphics	JPanel, paintComponent, Graphics2D, shapes, text, images
Multi-threading	basic parallel execution, threads, race conditions, deadlocks, thread safety, synchronization
Animation	animation via Timer class and events, animation via threads
Model-view-controller	ball-and-socket UML, observer pattern, model-view-controller architecture, game example
More Testing	equivalence-class testing, white box testing, testing loops and recursion, gray-box and Object-oriented testing
Files and Streams	text input (Scanner / Reader), binary input (DataInputStream, ObjectInputStream, serialization), output: PrintStream, DataOutputStream, ObjectOutputStream, PrintWriter
Java Generics	generic types, usage, best practices

Policies

Late Assignments

Assignments are due Fridays at 11:55pm. Late assignments may be submitted by the following Monday before 11:55pm, but will be deducted 50 %. Assignments submitted later than this will receive a mark of zero.

Missed Assignments

Missed assignments (submitted later than Monday at 11:55pm following the assignment deadline) will be given a grade of zero.

Missed Examinations

1. "Students who have missed an exam or assignment must contact their instructor as soon as possible. A doctor's note is required for misses due to illness. Arrangements to make up the exam may be arranged with the instructor. Missed exams throughout the year are left up to the discretion of the instructor if a student may make up the exam or write at a different time. If a student knows prior to the exam that she/he will not be able to attend, they should let the instructor know before the exam."

2. "Final exams - a student who is absent from a final examination through no fault of his or her own, for medical or other valid reasons, may apply to the College of Arts and Science Dean's office. The application must be made within three days of the missed examination along with supporting documentary evidence. Deferred exams are written during the February mid-term break for Term 1 courses and in early June for Term 2 and full year courses."

Incomplete Course Work and Final Grades

When a student has not completed the required course work, which includes any assignment or examination including the final examination, by the time of submission of the final grades, they may be granted an extension to permit completion of an assignment, or granted a deferred examination in the case of absence from a final examination. Extensions for the completion of assignments must be approved by the Department Head, or Dean in non-departmentalized Colleges, and may exceed thirty days only in unusual circumstances. The student must apply to the instructor for such an extension and furnish satisfactory reasons for the deficiency. Deferred final examinations are granted as per College policy.

In the interim, the instructor will submit a computed percentile grade for the course which factors in the incomplete course work as a zero, along with a grade comment of INF (Incomplete Failure) if a failing grade. In the case where the instructor has indicated in the course outline that failure to complete the required course work will result in failure in the course, and the student has a computed passing percentile grade, a final grade of 49% will be submitted along with a grade comment of INF (Incomplete Failure).

If an extension is granted and the required assignment is submitted within the allotted time, or if a deferred examination is granted and written in the case of absence from the final examination, the instructor will submit a revised computed final percentage grade. The grade change will replace the previous grade and any grade comment of INF (Incomplete Failure) will be removed. For provisions governing examinations and grading, students are referred to the University Council Regulations on Examinations subsection of the Calendar.

(2011 University of Saskatchewan Calendar/Academic Courses Policy)

Academic Honesty

The University of Saskatchewan is committed to the highest standards of academic integrity and honesty. Students are expected to be familiar with these standards regarding academic honesty and to uphold the policies of the University in this respect. Students are particularly urged to familiarize themselves with the provisions of the Student Conduct & Appeals subsection of the University Secretary Website and avoid any behaviour that could potentially result in suspicions of cheating, plagiarism, misrepresentation of facts and/or

participation in an offense. Academic dishonesty is a serious offense and can result in suspension or expulsion from the University.

All students should read and be familiar with the Regulations on Academic Student Misconduct, http://www.usask.ca/secretariat/student-conduct-appeals/StudentAcademicMisconduct.pdf, as well as the Standard of Student Conduct in Non-Academic Matters and Procedures for Resolution of Complaints and Appeals, http://www.usask.ca/secretariat/student-conduct-appeals/StudentNon-AcademicMisconduct.pdf.

Academic honesty is also defined and described in the Department of Computer Science Statement on Academic Honesty: http://www.cs.usask.ca/undergrad/honesty.php.

For more information on what academic integrity means for students see the Student Conduct & Appeals subsection of the University Secretary Website at: http://www.usask.ca/secretariat/student-conduct-appeals/forms/IntegrityDefined.pdf

Examinations with Disability Services for Students (DSS)

Students who have disabilities (learning, medical, physical, or mental health) are strongly encouraged to register with Disability Services for Students (DSS) if they have not already done so. Students who suspect they may have disabilities should contact DSS for advice and referrals. In order to access DSS programs and supports, students must follow DSS policy and procedures. For more information, check http://www.students.usask.ca/disability/, or contact DSS at 966-7273 or `dss@usask.ca`.

Students registered with DSS may request alternative arrangements for mid-term and final examinations. Students must arrange such accommodations through DSS by the stated deadlines. Instructors shall provide the examinations for students who are being accommodated by the deadlines established by DSS.