



CompSci 230

Software Construction

Course Information

S1 2015

V1.1 of 2015-03-02: corrected due-date for A4



Overview

- ▶ In Stage I, you learned how to write programs to solve small problems.
 - ▶ In CompSci 230, we teach programming “in the large”.
- ▶ Large software systems have many stakeholders.
 - ▶ What will its users want?
 - ▶ Can we describe user requirements, accurately and succinctly?
- ▶ Large software systems are very complex.
 - ▶ Can we describe the design of a complex software system, accurately and succinctly?
 - ▶ Can we be sure that a complex system will do what it is designed to do, and that it will not do anything unintended?
- ▶ In CompSci 230, you will learn some incomplete answers to these difficult questions.
 - ▶ I will also attempt to teach you how to “learn how to learn” the technical skills you will need in the future – as a competent computer professional.



Syllabus

▶ Four Themes:

▶ The object-oriented programming paradigm

- ▶ Object-orientation, object-oriented programming concepts and programming language constructs – **because, for many important problems, OO design is a convenient way to express the problem and its solution in software.**

▶ Frameworks

- ▶ Inversion of control, AWT/Swing and JUnit – **because many important “sub-problems” have already been solved: these solutions should be re-used!**

▶ Software quality

- ▶ Testing, inspection, documentation – **because large teams are designing, implementing, debugging, maintaining, revising, and supporting complex software.**

▶ Application-level concurrent programming

- ▶ Multithreading concepts, language primitives and abstractions – **because even our laptops have multiple CPUs. Dual-core smartphones are now available...**



Lecturers & Tutors

▶ Lecturers

▶ Clark Thomborson (Coordinator)

- ▶ W1-4: OO design in Java; W5-6: Frameworks; W11-12: Concurrency
- ▶ Email: cthombor@cs.auckland.ac.nz
- ▶ Office hour: Fri 3-4, in 810.845
- ▶ Phone: (09) 3737 599 x85753

▶ Diana Kirk

- ▶ W7-9: Software Quality; W10: Concurrency
- ▶ Email: dianakirk@gmail.com
- ▶ Office hrs: tbc

▶ Tutors (TBC)



Assessments (tentative schedule)

- ▶ See <https://www.cs.auckland.ac.nz/courses/compsci230s1c/assignments/>
- ▶ Practical (20%)
 - ▶ Assignments (16%):
 - ▶ Assignment 1, 4%, due 4pm Friday 27 March 2015 (end of 4th week)
 - ▶ Assignment 2, 5%, due 4pm Friday 1 May 2015 (end of 7th week)
 - ▶ Assignment 3, 5%, due 4pm Friday 22 May 2015 (end of 10th week)
 - ▶ Assignment 4, 2%, due 4pm Friday 29 May 2015 (end of 11th week)
 - ▶ Severe penalties for lateness
 - ▶ Quizzes (4%): Multichoice, online via Cecil
 - ▶ Quiz 1, available from 9am Friday 13 Mar to 11:30pm Monday 16 March
 - ▶ Quiz 2, available from 9am Friday 3 Apr to 11:30pm Monday 6 April
 - ▶ Quiz 3, available from 9am Friday 8 May to 11:30pm Monday 11 May
 - ▶ Quiz 4, available from 9am Friday 29 May to 11:30pm Tuesday 2 June
 - ▶ No late submissions allowed
- ▶ Theoretical (80%)
 - ▶ Test 15%, 8-9pm Tuesday 21 April. Tentative: room reservation is not yet confirmed.
 - ▶ Exam 65%, date and location TBC.
- ▶ You must pass the practical (assignments + quizzes) **AND** the theoretical (test + exam), in order to pass the course.
 - ▶ The practical passline may be lower than 50%! This is a decision of the examiners, so you should sit the exam even if you have poor practical marks.



Policy on Cheating and Plagiarism

- ▶ We use many ways to check that the work each student submits for marking is **their own work** and was not produced by, or copied from, someone else.
 - ▶ We start our checks by running a comparison program, which automatically compares all submissions from students.
- ▶ Note:
 - ▶ All assignments deemed to be too similar will be assigned a zero mark, and will be invited (by email) to discuss the situation with the course supervisor.
 - ▶ Offenders may be referred to the University Disciplinary Committee. See <http://www.auckland.ac.nz/ua/home/about/teaching-learning/academic-integrity>.
- ▶ Both the person who copied the work **and the person whose work was copied** are allocated a zero mark.
 - ▶ It is important that you **do not lend your assignments to others**. Never give anyone a copy of your assignment. It is the responsibility of each student to ensure that others do not copy their work.



Assessments (con't)

- ▶ **You cannot re-sit** a test or exam in this course.
 - ▶ You should always sit your tests & exams, if at all possible.
 - ▶ You should see a registered doctor, dentist, or counsellor as soon as possible.
 - ▶ You can apply for aegrotat and compassionate consideration, if you feel that personal circumstances affected your performance or preparation.
 - ▶ See <http://www.auckland.ac.nz/uoac/cs-aegrotat-and-compassionate-consideration>.
- ▶ **Severe penalties for late assignment submissions:**
 - ▶ -20% of possible marks, if submitted by 4pm on Monday after the due date.
 - ▶ -50% of possible marks, if submitted by 4pm on the Wednesday after the due date.
 - ▶ Contact the coordinator, if you have a medical condition or an exceptional, unforeseen difficulty which prevents you from completing the assignment on-time.
- ▶ **Lateness on quizzes**
 - ▶ We release the answers on the due date, so we **cannot allow late submissions**.



Tutorials

- ▶ Tutorials are optional, but highly recommended!
 - ▶ **Please note: there are no tutorials in the first week of lectures.**
- ▶ Currently, all tutorials are held in 303S-G75 or 303S-B75.
 - ▶ Your tutorial (lab) section is visible on [Student Services Online](#).
 - ▶ You're welcome to attend other tutorial sections, but there are only enough seats for the enrolled students -- so you may be asked to leave.
- ▶ **What happens at a tutorial:**
 - ▶ You'll do exercises based on prior lecture material.
 - ▶ You'll prepare for the current assignment.
 - ▶ You'll discuss sample answers to prior assignments and quizzes
 - ▶ You'll ask course-related questions, and the tutor will either answer them or “kick them upstairs” – by suggesting you ask this question during lecture!
 - ▶ You'll get the most out of your tutorials if you participate actively.
 - ▶ You'll get very little (or nothing!) out of attending tutorials (or lectures!) if you try to “learn by osmosis”. You'll learn most by “giving it a go”, seeing what happens, and thinking about it.



Quizzes

- ▶ Quizzes are run online through Cecil.
- ▶ You **MUST** sit each quiz during the time period and you **MAY** use any computer in any lab or at home as long as there is a network connection (no slower than 64K) to the Cecil website.
- ▶ Each quiz has 4 to 8 questions, and contributes 1% to the your total marks.
- ▶ You may make up to three attempts at each quiz, with your best mark being counted.
 - ▶ **Best strategy:** test yourself *after* you do the reading. Read some more after you complete the test. Form (or join) a study group to discuss similar problems.
 - ▶ **Terrible strategy:** randomly guess.
 - ▶ **Worst strategy:** memorise the answers to the quiz questions. This would be a complete waste of time – you won't pass the exam!
 - ▶ **Answers will be revealed after the closing date.**



Need Help?

- ▶ Required readings are online, mostly from **The Java Tutorials**
 - ▶ Start today! Read about Object-Oriented Programming Concepts, at <http://docs.oracle.com/javase/tutorial/java/concepts/index.html>
 - ▶ If you know Python, read <http://fpl.cs.depaul.edu/jriely/java4python/>.
 - ▶ My primary goal is to help you “learn how to learn technical material.”
 - ▶ If you merely listen to lectures, you’ll learn very little.
- ▶ Recommended readings are available in the library or online.
- ▶ The course website has lecture notes, examples, and some other useful resources, including links to software such as [Eclipse](#).
 - ▶ Website: <http://www.cs.auckland.ac.nz/compsci230s1c/>. Visible via Cecil.
- ▶ Don’t hesitate to ask your tutors and lecturers for help if you’re “stuck”!
 - ▶ But... there are only a few of us, and hundreds of students. Response may be slow.
 - ▶ Unlike in stage-I papers, we will **not** spoon-feed you with solutions.
 - ▶ You are expected to explore. Discover your own solutions to your own problems! If you’re not making mistakes, you’re not learning!! (Can you recognize a mistake?)



Reading assignment #1

- ▶ Before lecture on Thursday:
 1. [About the Java Technology](#), in the [Getting Started](#) trail of the [Java Tutorials](#);
 2. The first two sections (on classes and objects) in the [Classes and Objects](#) lesson of the [Learning the Java Language](#) trail;
 3. [Section 2](#) (on ‘Getting Started’) in [java4python v3](#);
 4. The first five subsections (to ‘Import’) of [Section 3](#) in [java4python v3](#).
- ▶ This isn’t “leisure reading” – you won’t remember much, and you won’t be able to do anything with what you remember, unless you are reading to discover an answer to your questions! For starters:
 - ▶ “What is X?”
 - ▶ “Why should I care about X?”