Instructor

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What do you think?

- Software Engineering == Coding/Programming

- Software Engineering != Coding/Programming

- Why?
All what you need to know about **Software Engineering** in one slide
Motivation (Ariane 5)

• “A picture is worth a thousand words”

• A video is worth million words.

• [http://www.youtube.com/watch?v=gP_D8r-2hwk](http://www.youtube.com/watch?v=gP_D8r-2hwk)
Motivation (Ariane 5)

- Ariane 5’s first test flight (Flight 501) on 4 June 1996 failed, with the rocket self-destructing 37 seconds after launch.

- Without going into much details
  (I cover this in more detail in “CSC-301 Introduction to Software Engineering”)
- There was a malfunction in the control software.
- And the root cause for the bug leading to this was
  - a data conversion from 64-bit floating point value to 16-bit signed integer value
  - (because the floating point value was too large to be represented by a 16-bit signed integer).
Challenges in Software Projects

37% of all projects succeeding (delivered on time, on budget, with required features and functions);

42% were challenged (late, over budget, and/or with less than the required features and functions)

21% failed (cancelled prior to completion or delivered and never used)

Source:
Standish Group 2011, ca. 10000 Projects
Instructor Industrial Background

- About 15 years of industrial experience.
  - 4 years at a startup
  - 6 years at IBM (mainly developing one of the WebSphere products)
  - 1 year in a medium sized company
  - Independent consultant/mentor
- Played different roles: Software Engineer/Designer/Team Lead/Project Manager/Business Analyst
- Worked using Agile techniques and in CMMi level 5 certified development center.
- Was the principal investigator for a consulting engagement with one of the largest financial institutions in Canada investigating their Requirements Engineering practices
Industrial Research

Worked for IBM Zurich Research Lab (ZRL) in Switzerland

- ZRL widely known for achieving two Nobel prizes (4 researchers)

Certifications

SUN Certified programmer for the JAVA 2 Platform
IBM Certified Business Process Analyst
IBM Certified Solution Designer - IBM Rational Unified Process V7.0
“An introduction to **software design** and development concepts, methods, and tools, using a statically-typed object-oriented language such as **Java**. Topics from: **version control**, build management, **unit testing**, **refactoring**, **design patterns**, **advanced IDE usage**, **regular expressions**, markup languages, parsing using finite state machines, and reflection.”
The unofficial description

Developing real software:

- Software Development process
- Tools and Techniques
- Dealing with Changing/Evolving Requirements

Learning a new language

Learning a new technology

How to work in a team successfully
Prerequisite

Prerequisite: CSC148 or CSC150


If you do not have the prerequisite but have a strong grasp of the topics listed above, please contact me about a prerequisite waiver.
Prerequisite knowledge

Language structures

- variables, aliasing, control structures (if, while and for)
- strings, lists, dictionaries, linked lists, trees
- functions, classes

Concepts: recursion, searching, sorting

Skills

- good coding style, solid tracing and debugging
- top-down design, OO decomposition
- asking (and answering) questions; knowing what you don’t know and how to find out!
Know it already?

Contact me if you are comfortable with all of the following:

- Java, JUnit, and IDE usage
- refactoring
- regular expressions
- using version control (cvs, svn, git, mtn, hg, bzr, etc.)
- design patterns
- using a UNIX shell

Regardless, you’re welcome to stay!
Marking Scheme

- Exercises – 10%
- Project (Including Lab Attendance) - 35%
- Quizzes – 20%
- Final exam – 35%
<table>
<thead>
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<th>Week number</th>
<th>Week Dates</th>
<th>Lab</th>
<th>Deliverable</th>
<th>Marks</th>
<th>Cumulative marks</th>
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<td>Sep 15 - 19</td>
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<td>Sep 22 - 26</td>
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| Final exam  | 35              | 95   |
| Labs participation | 5 | 100  |
| Total        | 100             |      |
Exercises

Two exercises, at the first half of the term, worth 5% each. Small, done individually.

Everyone who puts in a reasonable amount of work should get them right and get full marks.

Topics are chosen to prepare you for more significant pieces of work: assignments and tests.

Pre-marked:

- All marking is automatic, done by a script.
- The auto-tester will run several times over the course of a couple of days prior to the submission deadline.
- The results of the auto-tester will appear on MarkUs.
Coursework “handouts” and submission

- learn more about subversion soon.
- You will have your own repository and repositories for your teams.
- You will get the assignment/exercise handouts by checking them out from the repository.
- You will submit your work by checking it in into your repository.

**Important**: You will **NOT** submit online using MarkUs. Web submission is disabled for this course.
Quizzes and Final Exam

Quizzes

• Every 4 weeks, three 25-minute quizzes
• Each worth 10%.
• Only the best 2 out of 3 are considered for the final mark.

Final Exam

• You must get at least 30% of the final exam marks to pass the course.
Project

Phase 0:
• register partnership, submit teamwork-related information

Phase 1: Design (teams of two)
• You choose your partner from your tutorial section

Phase 2: Implementation and Testing (teams of four)
• Instructor forms teams by merging 2-person P1 teams

Phase 3: Implementation and Testing (teams of four)
• Same team as in Phase 2

We will use elements of Scrum, a modern software development process widely used in the industry today.

Your grade will depend on the finished product and also significantly on your development process and teamwork.
Labs

There will be nine labs.

These are worth 5% of your grade.

Sign up for a tutorial time slot on ROSI.

Lab room assignments will be posted on the course website before the first lab. They take place in CDF Labs (BA3175, BA3185, and BA3195).

Ask your TA questions — they are there to help you!
Textbook

There is no required textbook.

If you would like a hardcopy Java reference,
Winder and Roberts, Developing Java Software, 3rd edition
Academic Offences

Don’t cheat.

Seriously, don’t cheat.

It is an offence to claim someone else’s work as your own or to give someone your work.

You must not share work outside your team or seek out inappropriate aid.

• If in doubt of what’s appropriate, ask me.

Make sure to cite any outside resources (like the web or a textbook).

• It’s not an offence if you have cited properly, although you may not receive a good mark.
Getting (and giving) help

Course website:  
http://www.cdf.toronto.edu/~csc207h/fall/

Discussion board (Piazza):  
https://piazza.com/utoronto.ca/fall2014/csc207

Labs: the TAs are there to help!

My office hours BA 4268:  
• Tuesdays, Wednesdays 2-3:30pm

Email:  
• Do not email your TAs: they are not supposed to answer  
• Email me for personal matters only  
• Post your questions on the discussion board instead!
Doing your work

- All of the tools you need will be available on CDF.
- On CDF, launch Eclipse + ADT (Android Developer Tools), issue the command:
  ```
eclipse-android
  ```
- The Resources page of the course website will have:
  - Instructions for accessing CDF remotely
  - Installation instructions for Android SDK (includes Java and Eclipse)
  - Installation instructions for Subversion
Questions?

Next up: Subversion

Many thanks to Anya Tafliovich, Jen Campbell and other previous instructors of CSC207.