CS445/ECE451/CS645
Software Requirements:
Specification & Analysis

Overview and Admin Notes
Fall 2019
Daniel Berry
Welcome

• ... to Software Requirements: Specification and Analysis
• This course is known as:
  – ECE 451
  – CS 445
  – CS 645
  – SE 463
  – SE 1 (not an official course, just for discussing the courses)
• It is one course of a three-course set on software engineering:
Changes

• Previously, the courses could be taken only in order, as they shared an incremental project
  – SE1 ➔ SE2 ➔ SE3

• In Fall 2008, the three courses were decoupled, so they can be taken (in theory) in any order
More Changes

• This term’s course will be significantly different from those of the past decade
• Many new topics, new readings, some discussions, maybe even a movie
• I will be aiming for more real-world relevance, more realism, e.g., the project’s requirements will change significantly as the term progresses, just like in real life.
More Changes, Cont’d

• Your customer will be changing his or her mind a lot, just like in real life.

• I will be addressing agile development and where requirements analysis fits in with it.
Contacting Us On Class Issues

Please use the course account email instead of our personal e-mail addresses, unless it is about a personal or administrative matter:

– cs445 ATT student DOTT cs DOTT uwaterloo.ca

• If there will be a head TA, he or she will read this too.
Prof. Daniel Berry

– DC 3329
– Office hours: by appointment made by e-mail
  • Feel free to knock if the door is closed
– Email: dberry ATT uwaterloo DOTT ca
– Web: http://cs.uwaterloo.ca/~dberry
Dan outside of the classroom

• I’m a researcher in the field of software engineering, particularly requirements engineering

• I specialize in:
  – Requirements Elicitation
  – Ambiguity in Natural Language Requirements Descriptions
  – Creativity in Requirements Elicitation

• I dabble also in Electronic Publishing: formatting, typography, etc.
Dan outside of the university

- I swim, skate (both kinds), and ski (downhill snow and water).
- I am considered a good cook.
- I am even semi-professional as a cook, having catered two weddings, one not my own!
- I am a “Star Trek” and a “Big Bang Theory” fan.
- I write scientific satire.
- I write Biblical commentary.
- I have 3 children and 4 grandchildren.
- I love programming.
[Now, do I seem human enough? 😊]
The Course TAs

- Frederic Bouchard, frederic.bouchard ATT uwaterloo DOTT ca
- Reza Nadri, rnadri ATT uwaterloo DOTT ca
- Jia Rong Wu, jr2wu ATT uwaterloo DOTT ca

They will be your customers, one per group (more on groups later)
Back to the course

• Each week, we expect that you will attend
  – Two 80-minute lectures, one on Tuesdays and one on Thursdays.
  – One 50-minute tutorial on Mondays, possibly led by a TA, if it is scheduled.

• Tutorials are important, particularly for the term project!
Grading scheme

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<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Project</td>
<td>40 %</td>
</tr>
<tr>
<td>Assignments</td>
<td>10 %</td>
</tr>
<tr>
<td>Final exam</td>
<td>50 %</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100 %</strong></td>
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</tbody>
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- Grad students will be required to do an extra project worth 10% (grade will be rescaled)
Course Web page

http://www.student.cs.uwaterloo.ca/~cs445
OR
http://www.student.cs.uwaterloo.ca/~se463

• Lots of details will appear there over the term, especially the lecture slides and stuff about the project. This takes the place of a textbook, which the course does not have.

• Watch for announcements too.
Course email

cs445 ATT student DOTT cs DOTT uwaterloo DOTT ca

• Please send most questions here
  – You may send to Dan questions that relate to course administration or are personal in nature directly.
Grad students

• ... who are taking this as CS645
  – Please send Dan e-mail ASAP to dberry@ ATT uwaterloo DOT ca!

• You will be required to do a 25 minute lecture and written report on a topic related to the course material
  – I’m very open to possible topics
  – It’s worth 10% of your final grade

• [NOTE TO ALL!] Grad lecture material will be on the final exam!
Course project

• To be done in groups of 3 or 4, self-chosen
  – You will all get the same project grades
    • ... unless your partners think you’re loafing
• You will determine and then specify the requirements for some automobile-related system.
• Doing so will allow you to apply the requirements engineering principles and techniques discussed in lecture to the problems of eliciting, documenting, and validating the specification of a non-trivial software system.
Working in groups

• Don’t just pick your friends
• Consider:
  – Similar / complementary work habits, goals
    e.g., early bird vs night owl, OCD vs slacker
  – Need 1+ person with good organization skills for
    project co-ordination
  – Need 1+ person with good writing skills
• Ideally:
  – Equitably distribute work load
  – Minimize resentment
Working in groups

• The purpose of working in groups is to get you used to working in groups
  – We mean, it’s not just ‘cauz the course staff is lazy

• Working in groups is a key skill for success in industry.
  – It’s also really hard to teach or lecture about, so we try to make sure that you have some interesting experiences.
Working in groups

• Your project is not a collection of little independent tasks; instead, there will be several work stages for each deliverable:
  – Discuss and allocate tasks to group members
  – Work on tasks (alone or not)
  – Distribute draft solutions
  – Meet to discuss drafts, evaluate, iterate, plan
  – Revise, evaluate, iterate
  – Stitch together final draft and submit
Course project

- Your group will be assigned a TA, who will serve as your customer and will grade all of your deliverables.
  - Thus, you’ll get some consistency in marking too.
  - He or she will not know everything about the project, will be learning along with you, and will change his or her mind, just like a real-life customer.
Course project

• Your job:
  – to create detailed models of the various entities and processes,
  – to decide what features should be there,
  – to decide the correct functionality of these features,
  – eventually, to use these models and decisions to create a user’s manual or an SRS describing your software.
Final Deliverable

• The final deliverable is a user’s manual (UM) or an SRS
  – Remember that you don’t have to implement them (or anything else!)
Course software

• You will need to use:
  – A UML modelling / drawing tool
    • We recommend MagicDraw (free to UW students)
    • But you could use MS-Visio, OmniGraffle, dia or ....
  – A document editor
    • MS-Word or OpenOffice
    • OR use \LaTeX

• Many more details on course webpage under “This Term’s Project Description”
First tutorial

• Will take place in the first full week.

• Dan will begin to talk about the project and answer questions you may have.
Second tutorial

• Will take place in the second *full* week.

• Dan will continue to talk about the project.

• There will also be free time to pick your group partners, if you have not formed one already.
First assignment, Deliverable 0

• Send a plain text e-mail message (no attachments, no MIME, no .html, .doc, .rtf, .pdf, etc. files) to the course account: cs445 ATT student DOTT cs DOTT uwaterlooDOTT ca with your group composition, formatted like this:

  Fine, Larry 234567891 larry larry@threestooges.org
  Howard, Curly 345678912 curley curley@threestooges.org
  Howard, Moe 123456789 moe moe@threestooges.org

  If the message is not in the specified format, it will be returned for correction, even if it’s just to get it in plain text!
First assignment, Deliverable 0

- We will assign your group a number and a TA, and let you know by e-mail.

- Groups are to be formed and announced by 5pm on Friday of the second full week,
  - But earlier is fine too, 😊.
  - If you need help in finding group mates, send e-mail to the course e-mail account.
Course text

• There are no required texts or course notes.
• If you want extra reading, we recommend the references under the Readings section of the course Web page, particularly those by Gause and Weinberg
• If we find anything relevant, we will add it or a reference to it to the course Web page.
Sources

• The course materials are derived from many sources, especially slides created by:
  – Prof. Jo Atlee (course designer)
  – Prof. Dan Berry

• With additional materials by:
  – Prof. Nancy Day
  – Prof. Mike Godfrey
  – Dr. Davor Svetinovic
  – Prof. Richard Trefler

• Any missteaks are most likely ours ☺
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