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:
  - ECE452/CS446/SE464 (SE 2): Software Design and Architecture.
  - ECE453/CS447/SE465 (SE 3): Software Testing, Quality Assurance, and Maintenance.

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 de-coupled, 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.

Dan

Dan

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

Project	40 %
Assignments	10 %
Final exam	50 %
Total	**100 %**

- 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 DOTT 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 curly@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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