Welcome to Software Engineering

“...’cause if you’re gonna play the game, boy, you’ve got to learn to play it right.”
-- from “The Gambler”

Jun 21, 2006  CSE403, Summer’06, Lecture 02

Lecture 02: Course Overview

Valentin Razmov

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Everyone Meets Everyone: Instructor

Valentin Razmov
- Ph.D. candidate, Computer Science & Engineering
- M.Sc. (from UW) in 2001
- Course-related Experience
  - CSE403: 1 quarter as instructor + 5 quarters as a TA
    - One of the courses I enjoyed being involved in the most!!
    - Authored 5 conference papers on education-related experiences from CSE403
  - 3 years of industrial experience across 5 different companies (including 3 internships)
- Career Interests
  - Teaching; Project Management
- Research Interests
  - Methods for Effective Teaching and Learning

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Everyone Meets Everyone: Teaching Assistant

Lincoln Ritter
- Ph.D. student, Computer Science & Engineering
- M.Sc. (from UW) in 2006
- Course-related Experience
- Several quarters as a TA in other CS courses
- Research Interests
  - Computer graphics and visualization

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Everyone Meets Everyone: You...

- We’d like to get to know you all, so please tell us a bit about yourselves.

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Outline for Today

- Course logistics
  - Course web, mailing list, room, technology, etc.
- What is Software Engineering about as a discipline?
- What to expect from this course
  - Readings, assignments, projects, etc.
  - Unique aspects
- What you will have learned by the end of this course

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Course Logistics

Course web
- Will contain lecture/section materials, assignments, resources, latest course schedule

Course mailing list
- You should all be subscribed by now.
  - If not, instructions are on the course web.

Room: CSE305
- For all class sessions, unless otherwise announced

Technology
- Support has equipped the computer labs with the latest and greatest software, so you can do your job well
- Will occasionally use tablet PCs in the classroom

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What Is Software Engineering?

There is no right or wrong answer...
- According to one colleague: “Software engineering is about people working in teams under stress to create value for their customers.”
- Throughout this class, as in this activity:
  - Everyone can add something of value to the discussion.
  - Everyone has a view of the overall picture, but maybe not a full view.
  - Together, we all can reach a more accurate understanding and, ultimately, higher quality results.

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What Software Engineering Encompasses

In contrast to many other CS disciplines you have been exposed to, this one involves aspects of:
- Computer science (incl. algorithms, data structures, prog. languages, tools)
- Business and management (incl. project management, scheduling, prioritization)
- Economics/marketing (incl. what makes a product sell, niche markets, monopolies)
- Communication (incl. managing relations with stakeholders – customers, management, developers, testers, sales)
- Law (incl. patents, licenses, copyrights, reverse engineering)
- Sociology (incl. modern trends in societies, localization, ethics)
- Political science (incl. regulations; topics at the intersection of law, economics, and global societal trends: [public] safety)
- Psychology (incl. personalities, styles, usability, what makes things fun)
- Art (incl. GUI design, what makes things appealing to users)
  - more?

Hence, the flavor you get of the discipline will necessarily be "softer" and there will be fewer clearly right/wrong answers.

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What to Expect from This Course: Learning

Learning = Experience + Feedback + Reflection
- Experiences come from your work on quarter-long team projects
- Feedback comes from instructors, peers, guests, etc.
- Reflection comes through readings, discussions in class, and homework written assignments
- Iterating further strengthens the learning and retention of knowledge.

Critical skills for learners
- Problem solving
- Team work
- Stress management
- Communication
- Self-assessment

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What to Expect from This Course: Projects

You make project proposals (and then vote on which projects to develop)
- Start thinking about ideas today!
- Project ideas united under a common theme: “remote collaboration” (more details on this will follow)
- Project ideas from previous quarters are linked from the respective course web.

Project development in stages
- Reflects modern methodologies for effective software project development
- You get feedback from us after each stage, but also regularly during the development at each stage.

Project teams need to have at least 5 members.
- Otherwise it’d be toy development, and you’d miss on some of the most important experiences.

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What to Expect from This Course: Readings

"Rapid Development" by Steve McConnell
- Main text: inexpensive; a very good reference after the course
- Specific readings will be suggested throughout the quarter.

"The Pragmatic Programmer" by Andrew Hunt & David Thomas
- Main text: more recipe-oriented and not as complete as "Rapid Development", but has sample problems
- Very well written and organized

"Death March" by Edward Yourdon
- Recommended (but not required) reading
- Supplements the above two by its unique perspective from industry
- Handouts, to be distributed in class
- Short, targeted at specific topics of interest
- Articles online
- Some are already linked from the course web.

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What to Expect from This Course:

Peer Reviews

- A standard form of constructive peer feedback used regularly and widely in industry
- Allows you to see yourself through the eyes of your teammates
  - ... and assess what they think you are doing well and what you are not doing so well
- Allows you to practice providing useful feedback
- Peer reviews are anonymous to students, but not to instructors.
- To foster individual accountability within teams without causing pressure, the final round of peer reviews can be used for grading purposes.
  - Let’s vote: *Do you accept this kind of accountability?*

What to Expect from This Course:

Homework Assignments

- Individual assignments
- One-page reflective essays
  - ... asking you to relate project experiences to ideas from readings and/or class discussions
  - Emphasis on depth of reasoning, not whether you have “the right answer”
- Hands-on exercises
  - related to material discussed in class

What to Expect from This Course:

Unique Aspects

- Cross-disciplinary nature of the subject
- Larger-size teams
- You have the opportunity to propose and work on your own ideas
- Instructors in the coach role
- Mistakes along the way are encouraged, not penalized.
- Few clearly right/wrong answers
- Plans (always) change
- Content topics: software design, testing, project management, etc.

What to Expect from This Course:

Grading Criteria (tentative)

- Evaluation based on both effort and quality
- Project: 40%
  - LCO (6%), LCA (6%), zero-feature release (6%), beta release (10%), final release (12%)
  - Includes both a team grade and an individual grade.
- Homework: 20%
- Midterm: 12%
- Final exam: 20%
- Participation: 8%
- In-class and intangibles

What to Expect from This Course:

To Succeed It Takes...

- Students in the past had been spending on average ~15 hrs/week on this course.
- By the end, we would like to have seen evidence that you personally have learned.
- Be proactive and open to learning.
- Be responsible toward your teammates.
- Honesty is prized highly.
- Do not skip assignments or miss deadlines – they are all important (and not hard to complete / meet).

What to Expect from This Course:

To Succeed It Takes... (cont.)

- “You get out of this class exactly as much as you put into it.”

| M21 | I could have extracted more value out of this course by...
<table>
<thead>
<tr>
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<tbody>
<tr>
<td></td>
<td>Doing more of the readings.</td>
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<tr>
<td></td>
<td>Doing some of the suggested readings that I didn't have the time to read thoroughly.</td>
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<tr>
<td></td>
<td>Focusing myself to apply some of the practices despite the limited scope of the project. In the very least it would have exposed me directly to some of them.</td>
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<td>Taking less classes, then I would have more time to spend on this class.</td>
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<tr>
<td></td>
<td>Doing more of the suggested readings.</td>
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<td>I could have taken more initiative and contribute to and learn about other aspects of the project such as project management.</td>
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<td>Being able to get up in the morning.</td>
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<td>I think a larger team would have made for an even more interesting learning experience.</td>
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What You Will Have Learned by the End of This Course

- Get exposure to some of the best software development practices in use today
- Learn how to more effectively collaborate with others toward a common goal
- Understand how software is produced – from conception to shipping and subsequent maintenance
- Have experience working in a larger team toward a common goal
- Be able to articulate and understand ideas in a conversation with expert practitioners in the field of software engineering
- Understand the issues and tradeoffs involved in making decisions as software engineers and project managers

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Your Expectations: Feedback to Us

Please tell us (anonymously, in writing):

- What do you most want to learn in this course?
- What concerns you the most about this course?