

CS846: Advanced Topics in Software Engineering: Requirements Engineering

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Requirements Specification

- **Requirements — desired goals or behaviour**
 - **What are we trying to accomplish?**
 - **What does the customer want?**

Requirements Specification, Cont'd

- **Specification — description of proposed behaviour of software system**
 - **Can a software system help us accomplish our goals?**
 - **What would that software system do?**

The very familiar CS assignment descriptions are no more than informal specifications.

An entire course on requirements?

Why devote an entire course to requirements?

Requirements Problems:

- **80-85% of all software errors are requirements errors.**
- **The cost to fix an error grows exponentially with lifecycle stages.**

So it's important to get requirements right early in the lifecycle of a computer-based system.

Course Requirements

Each student will select a topic, research it, and present it to the class in a one-hour seminar.

I will talk about topics that students don't select but want to hear about until students are ready.

Possible Topics

- **Creativity in requirements elicitation**
- **Ambiguity in requirements specifications**
- **User interface in requirements**
- **Natural language processing in requirements engineering**
- **Abstraction identification in natural language requirements specifications**
- **Traceability in requirements engineering**
- **Requirements management**

Possible Topics, Cont'd

- **Empirical evidence that up-front requirements engineering pays off big**
- **Empirical evaluation of requirements engineering methods**
- **Requirements engineering in agile development**

Possible Topics, Cont'd

- **Security, safety, survivability, robustness, or privacy requirements**
- **Product line requirements**
- **Laws and regulations as requirements**
- **Requirements for new Internet**
- **Requirements for service-oriented, Web-hosted, distributed systems**

Possible Topics, Cont'd

Or ...

Something you think of, with my approval.

Note that these topics can lead to research for your master's or doctoral thesis.