

# CS 361 – Software Engineering I

**Catalog Description:** Introduction to the "front end" of the software engineering lifecycle; requirements analysis and specification; design techniques; project management. (Writing Intensive Course)

**Credits:** 4                   **Terms Offered:** Fall, Winter

**Prerequisites:** Writing 151; CS151, and experience with object-oriented programming and data structures (e.g., CS161, CS162, CS261)

**Courses that require this as a prerequisite:** CS 362

**Structure:** Three 50-minute lectures per week

**Instructors:** Primary, Margaret Burnett; secondary, Carlos Jensen

## Course Content:

- Software lifecycle activities and models
- Requirements engineering, requirements elicitation, writing requirements documents, requirements reviews, UML notation
- Software architectures, distributed system architectures
- Object-oriented design, design patterns
- Project management, risk analysis

## Measurable Student Learning Outcomes:

At the completion of the course, students will be able to...

1. **Select** the most appropriate software process model to use in a particular situation (Level 4; ABET Outcomes: a, b, c)
2. **Synthesize** requirements for a realistic software system and write a requirements specification document (Level 5; ABET Outcomes: B, c, f, I, j)
3. **Model** system requirements using one or more semi-formal notations such as UML, dataflow diagrams, entity-relationship diagrams, or state diagrams (Level 4; ABET Outcomes: a, b, c, I, j)
4. **Design** software systems at an architectural level and at lower levels, using one or more techniques, such as object-oriented design or agile methods, and express these designs in design specification documents (Level 5; ABET Outcomes: a, b, c, i, K)
5. **Validate** designs and adjust the specification or design as necessary (Level 4; ABET Outcomes: a, b, c, j, k, n)
6. **Describe** several methods of estimating the cost and developing a schedule for a programming project (Level 1; ABET Outcomes: a, b, f, i)
7. **Participate** effectively in a team environment (Level 3; ABET Outcomes: d, e, f, O)
8. **Produce** professional-quality software-related documents (Level 3; ABET Outcomes: d, f, I, O)

## Learning Resources:

- *Software Engineering* by Ian Sommerville (required)
- *UML Distilled: Applying the Standard Object Modeling Language*, Martin Fowler, Kendall Scott (required)
- *No Silver Bullet* by Fred Brooks (optional)
- *Extreme Programming* by Jim Highsmith (optional)

**Students with Disabilities:**

Accommodations are collaborative efforts between students, faculty and Services for Students with Disabilities (SSD). Students with accommodations approved through SSD are responsible for contacting the faculty member in charge of the course prior to or during the first week of the term to discuss accommodations. Students who believe they are eligible for accommodations but who have not yet obtained approval through SSD should contact SSD immediately at 737-4098.

**Link to Statement of Expectations for Student Conduct:**

<http://oregonstate.edu/admin/stucon/achon.htm>

Revised: 8/15/07