Southern Illinois University Carbondale

CS435: Introduction to Software Engineering

Fall 2012

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Phone: 453-6057
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Texts:


Software process models, software engineering methods, and software tools have been adopted successfully across a broad spectrum of industry segments. This course is designed for upper-level undergraduate student and first year graduate student to help them understand principles, concepts, methods, and techniques of the software engineering approach to producing quality software.

Prerequisite:
CS330 with a grade of C or better or equivalent course

Written and Programming Assignments:
There will be many written assignments and a few programming assignments. Your written assignments and programs should be prepared in electronic documents submitted through SIU online system (https://online.siu.edu). Upon receiving a graded assignment, if you have a dispute about the grading, please return the assignment to T.A. within a week, with a note explaining your concerns. T.A. will decide if he needs to re-grade it or not. The re-graded paper will be returned to you and the grade posted on the blackboard will be updated. If you still have questions, you can talk to me in person about the disputes during my office hours.

**Team Final Project:**

A team with no more than 3 students is allowed for this collaborative work. The ultimate goal is to deliver reliable and trustworthy systems economically and quickly. The software must meet all requirements before releasing it to the customer. Your team will investigate a particular real-life sophisticated problem that is of interest to you. I will also provide several candidate final projects for you to choose from. Design and implement the system that integrates several software engineering principles and practices you learnt in the class. Project proposal should be submitted to get instructor’s approval. You will write a report and give a presentation with live demo to the class during the last week of the semester.

**Quizzes:**

Every Other Friday we will have a 10-minute quiz. The quizzes consist of questions on material covered in the past two weeks. To be excused from a quiz, you must contact the instructor before the Friday class.

**Exams:**

There will be a Midterm exam and a Final exam. There will be no makeup exams. If you cannot take an exam during scheduled time, you should consult the instructor in advance.

**Late Policy:**

Homework and lab assignments must be submitted to blackboard by the due time unless you have prior approval of the instructor. The late policy for all assignments is as follows: 10% points off, if submitted within 24 hours after the due date; 25% off, if submitted 24-48 hours after the due date; no credit if submitted two days or more days after the due date unless prior arrangements are made with the instructor with acceptable reasons. Partially finished assignments will receive partial credit.

**Academic Integrity:**

*Plagiarism* behavior in any form is unethical and will be punished. All work submitted by a student (home works, projects, programming assignments, and exams etc. except final project) has to be a student's own work. Students are allowed and encouraged to discuss with other students and look up resources in the literature for their assignments, but **appropriate references must be included for the materials consulted**, and appropriate citations should be made when the material is taken verbatim.
Definitions and policies on academic dishonesties are described in detail on the website (http://www.cs.siu.edu/department/cheating.html). The instructor will expect students to be aware of these guidelines and to conduct themselves accordingly. If cheating occurs, the student will receive a failing grade on the assignment and (at the instructor’s discretion) a failing grade in the course. The instructor may also decide to forward the incident to the University Judicial Affairs Office for further disciplinary action.

**Emergency Procedures:**
Southern Illinois University Carbondale is committed to providing a safe and healthy environment for study and work. Because some health and safety circumstances are beyond our control, we ask that you become familiar with the SIUC Emergency Response Plan and Building Emergency Response Team (BERT) program. Emergency response information is available on posters in buildings on campus, available on BERT's website at [www.bert.siu.edu](http://www.bert.siu.edu), Department of Safety's website [www.dps.siu.edu](http://www.dps.siu.edu) (disaster drop down) and in Emergency Response Guideline pamphlet. Know how to respond to each type of emergency.

Instructors will provide guidance and direction to students in the classroom in the event of an emergency affecting your location. It is important that you follow these instructions and stay with your instructor during an evacuation or sheltering emergency. The Building Emergency Response Team will provide assistance to your instructor in evacuating the building or sheltering within the facility.

**Grades:**
The course grade will be distributed as follows:

- Attendance 5%
- Written and programming assignments 25%
- Projects 15%
- Quizzes 15%
- Midterm Exam 20%
- Final Exam 20%

**Tentative Topics**

1. **Introduction**
   - The nature of software
   - Software engineering
   - The software process
   - Software engineering practice
   - Software myths

2. **The software Process:** It presents a variety of different views of software process, considering all important process models and addressing the debate between prescriptive and agile process philosophies.
   - Prescriptive Process Models
3. **Modeling and Design**: It presents analysis and design methods with an emphasis on object-oriented techniques and UML modeling. Pattern-based design and design for web applications are also considered.

- Principles that Guide Practice
- Understanding Requirements
- Requirements Modeling: Scenarios, Information, and Analysis Classes
- Requirements Modeling: Flow, Behavior, Patterns, and WebApps
- Design Concepts
- Architectural Design
- Component-Level Design
- User Interface Design
- Pattern-Based Design
- WebApp Design

4. **Quality Management**: It presents the concepts, procedures, techniques and methods that enable a software team to assess software quality, review software engineering work products, conduct SQA procedures, and apply an effective testing strategy and tactics. In addition, formal modeling and verification methods are also considered.

- Quality Concepts
- Review Techniques
- Software Quality Assurance
- Software Testing Strategies
- Testing Conventional Applications
- Testing Object-Oriented Applications
- Testing Web Applications
- Formal Modeling and Verification
- Software Configuration Management
- Product Metrics