

SENG 6230: Software Engineering Foundations

Fall 2018

Instructor	Dr. Mark Hills
Scheduled Class Time	Tuesday, Thursday: 12:30pm – 1:45pm, Brewster B-203
Instructor Office	Science & Technology Building, Room C-110
Office Hours	Tuesday 2pm to 3pm Wednesday 1pm to 4pm Thursday 2pm to 3pm Feel free to make an appointment with me if you need to meet outside of these hours.
Instructor Phone	252-328-9692
Instructor Email	hillsma@ecu.edu (response within 24 hours during the week, longer on weekends)
Course Web Page	Blackboard: https://blackboard.ecu.edu
Required Textbooks	<i>Software Engineering: Modern Approaches (2nd Edition)</i> , by Eric J. Braude and Michael E. Bernstein, Waveland Press, 2011 ISBN-10: 1-4786-3230-5

Course Description and Objectives

The catalog description for this course is as follows:

Software project development using software engineering principles and current software development techniques.

This course provides the practical and theoretical knowledge of software engineering used as a foundation for both software engineering research and practice. Students will learn the processes, methodologies and tools used during the complete life cycle of professional software development, allowing them to begin using state-of-the art software development techniques that will aid in the success of their software development and research projects. Students will also begin to explore current software engineering research through engaging with relevant research papers. Students are required to complete a team project over the course of the semester.

Upon completion of this course each student will be able to:

- Understand the nature, objectives, and methods of software engineering practice
- Evaluate and chose process models for the development of software systems
- Use appropriate project scheduling and management techniques to create project management plans and documents
- Use appropriate requirements elicitation, analysis, and modeling techniques to establish and document software requirements

- Design software systems using object-oriented techniques and visual modeling tools
- Use appropriate software testing techniques to create test cases, perform tests, and create test documentation
- Use version control systems to manage software configurations and collaborate effectively on software development

Many of these topics (e.g., requirements analysis, software testing) are looked at in a more in-depth fashion in other courses in the software engineering curriculum.

The following applications may be used in this course:

- UML Requirements and Design Modeling: NoMagic MagicDraw
- Project and Task Management: GitHub Projects
- Version Control/Configuration Management: Git and GitHub
- Development Environment: JetBrains IntelliJ or other language-specific IDEs
- Unit Testing: Junit or other language-specific unit testing frameworks

Prerequisites

The only prerequisites for this course are enrollment in either the Computer Science or Software Engineering graduate programs and the consent of the instructor. **You are expected to be familiar with Java, or another object-oriented language like C++ or C#, at the level of a student that has successfully completed an introductory computer science sequence or SENG 5000. If you do not possess this background knowledge, you will not do well in this course.** You may opt to use a different language on your project (if your project team opts to do so, this is a group decision), but Java gives us a shared programming language for examples and a shared baseline to build from in terms of development knowledge and concepts (e.g., the distinction between a class and an object of that class). If you are familiar with a similar language, especially C#, adapting to Java should be fairly straight-forward. If you are not familiar with Java, please read, and go through the exercises in, a book like Schildt's "Java: A Beginner's Guide". There are also a number of online resources you can look to, including videos on the Lynda.com tutorial service (available to all ECU students). If in doubt, ask me.

Topics

Topics covered in this course include:

- The nature of software and software engineering practice
- Software process models
- Software requirements elicitation, analysis, and documentation
- Software architecture and design, focusing on object-oriented design techniques
- Modeling with the Unified Modeling language (UML)
- Software testing strategies and documentation
- Project management concepts, including team management, risk management, and project estimation
- Configuration management
- Software maintenance and evolution

Grading

Students will be evaluated based on the combination of class activities. The final grade will be assessed with the following criteria:

Assessment		Grading
Midterm exam (20%) and final exam (20%)	40%	A: ≥ 90
Hands-On Activities/Homework Assignments	20%	B: ≥ 80
Group Project (Project and process management, Requirements, Design, Implementation, Test, Documentation and Presentation)	40%	C: ≥ 70
Total	100%	F: < 70

Exams: Exams are closed book and closed notes, with the exception of an individual note sheet, an 8 ½ x 11 (letter size) sheet of paper, that can include hand-written notes on both sides. This sheet cannot be shared and must be handed in with each exam. The midterm exam is scheduled during the class meeting time on the Tuesday before Fall break (October 2). The final exam is scheduled during the class meeting time on the last regular day of class (November 29). Both the midterm and final exams are 75 minute exams. The final project presentations will be held during the final exam period, which is Wednesday, December 5th from 11am to 1:30pm.

If you are taking the course online, you must have a proctor for the midterm and for the final exam. You must use the University of North Carolina Proctoring Network. More information can be found at: <http://online.northcarolina.edu/exams/overview.htm>

Group Project: Each group will be approximately 5 students (depending on the ultimate size of the class – they could be a bit smaller). More details about the project are available on Blackboard. The project tasks, including points out of the 40 “points” for the project, include:

1. Select and follow a software process model to develop the project. (3 points)
2. Develop a project schedule and project management plan, monitor project progress. (3 points)
3. Document potential risks and develop a risk management plan. (3 points)
4. Define system requirements including functional requirements and non-functional requirements. (5 points)
5. Define system design models using UML. (5 points)
6. Implement the system. (10 points)
7. Develop test suites for unit test and system test, and document test results. (5 points)
8. Document and present the project. (6 points)

Attendance Policy

You are expected to attend class. You are responsible for announcements and assignments given in class and posted on Blackboard. If you miss a class, it is up to you to obtain notes and any other information that was provided in the class. Excuses that you did not know about something because you did not come to class, did not see an announcement on Blackboard, and/or did not obtain the information from someone else will not be accepted. If you are having trouble understanding the

lectures, come to office hours or ask for help. Get help as early as possible. If you wait until the end of class to seek help, there is most likely very little that you can do to improve your score.

Starfish

This course uses the Starfish system to provide you with information on your performance within the course. For more information, please see <http://www.ecu.edu/cs-acad/advising/upload/Starfish-Student-Getting-Started.pdf>.

Student Conduct

Smoking is not permitted in classrooms. Please turn off mobile phones in class. Laptops and tablets can be used for taking notes, but should not be used for other work (or recreational browsing, playing games, etc).

Students are expected to abide by the university's Student Honor Code. The homework that you do is a critical part of your education. Each student is expected to do his or her own individual work, and each group is expected to do their own group work. That does not mean you are not allowed to discuss your ideas with other students or groups. Working in groups can be beneficial, and I encourage you to talk through ideas with other students. But outright copying is considered plagiarism and is unacceptable. Students who copy other students' work, or who allow their work to be copied, or who copy their work from other sources, such as the Internet, will receive either no credit or negative credit for the assignment, and may be reported to the university for an academic integrity violation.

Other potential academic integrity violations are cheating, falsification, multiple submissions of the same work in different classes, and attempts at any of these violations. Please see http://www.ecu.edu/cs-studentlife/policyhub/academic_integrity.cfm for more details.

Academic integrity violations can result in a grade penalty up to and including an F for the course.

Incompletes

No incompletes will be issued in this course except for extraordinary circumstances, which generally will be situations where almost all work is complete, this work has been done at an acceptable level of quality, and it is realistic that you can pass the course once the remaining work is completed.

Retention Requirements

Academic requirements for retention have changed. Please be aware of the following new GPA requirements. Please discuss the retention requirements, entrance to major requirements, and your goals with your academic advisor.

GPA Hours at ECU (identified in Transcript in Banner Self Service) plus transferred credit hours	“Old” Retention Requirement All courses taken at ECU	New Retention Requirements Effective with Fall 2011 grades All courses taken at ECU
1-29 semester hours	1.6 GPA	1.8
30-59 semester hours	1.8 GPA	1.9
60-74 semester hours	1.9 GPA	2.0
75 or more semester hours	2.0 GPA	2.0

Weather Emergencies

In the event of a weather emergency, information about ECU can be obtained through the following sources:

ECU emergency notices <http://www.ecu.edu/alert>
ECU emergency information hotline 252-328-0062

Students with Disabilities

East Carolina University seeks to comply fully with the Americans with Disabilities Act (ADA). Students requesting accommodations based on a disability must be registered with the Department for Disability Support Services located in Slay 138 ((252) 737-1016 (Voice/TTY)).

For more information, please see <http://www.ecu.edu/cs-studentlife/dss/>.

Caveats

Occasionally, it may be necessary to revise this syllabus due to extenuating circumstances. I reserve the right to revise this syllabus if the need arises. If I do so, I will provide you with advance notice.