

SENG 6250: Software Systems Modeling and Analysis Fall 2013

Class Meeting	Tuesday and Thursday, 2pm – 3:15pm Science & Technology Building, Room 144 (Global Classroom)
Instructor	Dr. Mark Hills
Office	Science & Technology Building, C-110
Office Hours	Monday & Wednesday 11:00am – 12:30pm Tuesday & Thursday 3:30pm – 4:30pm Or by appointment (please email me)
Phone	252-328-9692
Email	hillsma@ecu.edu (responses within 24 hours)
Skype	mahills
Course web page	http://blackboard.ecu.edu

Course Summary

The catalog description for this course is as follows:

Methods for the construction of software including formal notation language and its application to the analysis and specification of software system requirements.

In this course we will cover a number of topics in the areas of software modeling. This includes more formal techniques related to formal logics, specification, and model checking, as well as model-driven software engineering techniques including UML, domain-specific modeling languages, model to model and model to text transformations, and model management and evolution.

Prerequisites

The prerequisite for this course is SENG 6230 (Software Engineering Foundations). If you have not taken this course, please schedule time to meet with me to discuss your background and preparedness for this course.

Learning Outcomes

After taking this course, you should be prepared to:

- apply modeling and model-driven techniques for building and understanding software systems;
- use tools such as Alloy, NuSMV, Eclipse EMF, and Epsilon to build, explore, reason about, verify, and transform models;

- engage with, and potentially add to, the research literature on modeling and model-driven software engineering, such as papers that appear in MODELS, SLE, ICMT, and other conferences and journals.

Textbooks

There is one required textbook for the course: *Model-Driven Software Engineering in Practice*, by Brambilla, Cabot, and Wimmer. This book is available through Amazon.com at <http://www.amazon.com/Model-Driven-Software-Engineering-Practice-ebook/dp/B00A45A4LG/> and is also available at the ECU campus bookstore.

There is one recommended textbook for the course: *Logic in Computer Science* by Huth and Ryan. This book is available through Amazon.com at <http://www.amazon.com/Logic-in-Computer-Science-ebook/dp/B00AKE1QXQ/> and is also available at the ECU campus bookstore. I plan to cover all the material we need from this book directly in the course, but this is a great book to get if you are interested in logical methods in computer science. This book will be on reserve at the library.

Books on other topics, such as UML, could be useful, and there are also a number of online tutorials, etc on these topics. Feel free to post links to anything useful that you find. I will also be posting links to a number of online resources and conference or journal publications as the course progresses. These will all be available through the course Blackboard site, available at the link shown above.

Exams

There will be one midterm exam given during the course. This exam will be on **Thursday, October 3rd**, during class. More details about the actual contents of the exam will be available closer to the exam date. The exam will be open book, open notes, but no electronic devices are allowed -- so, if you take notes using a laptop or tablet, please print them out in advance! We will review for the exam in class on October 1st.

The final exam for the course will be on **Tuesday, December 10th**, from **2pm – 4:30pm** in our normal classroom. More details about the exam will be available closer to the exam date. The exam will be open book, open notes, but no electronic devices are allowed -- so, if you take notes using a laptop or tablet, please print them out in advance! The last regular day of class, Tuesday, December 3rd, will be used to review for the final.

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

Grading

Students will be evaluated based on a combination of class activities, including five homeworks blending writing and programming, two exams, and a group project. The final grade will be assessed with the following criteria, with grades normalized to a 100 point scale:

Grading	
A	≥ 90
B	≥ 80
C	≥ 70
F	< 70

This grade is based on the following relative weights of the various activities:

Weighting	
Homework	25%
Midterm Exam	25%
Final Exam	25%
Group Project	25%

The group project will involve defining a domain-specific modeling language. The goal is not necessarily to have the best language (language design is hard), but to select an interesting and useful domain and come up with a reasonable language that illustrates and uses the techniques we will be talking about in class. In some cases, this could mean reading ahead – we may not have covered all the details yet by the time you need them, but the book should at least have information and references to get you started, and you are welcome to schedule time with me to discuss aspects of the project. Important dates for the project are the following:

- September 30: You should have selected a domain you wish to model
- October 21: You should have a specific design for the language, including how the language will work (e.g., you will generate another model that you can do something with, you will generate Java that executes, etc)
- November 21 & 26: Your implementations should be finished, and you are expected to give a talk describing what you've done

The project will involve a number of teams which **must** be made up of both on-campus and off-campus students. We will discuss team size and number of teams once we have a good idea of how many students will be taking the course.

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 telephones while 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 work, except where teamwork is explicitly allowed or required. That does not mean you are not allowed to discuss your ideas with other students. Working in groups can be beneficial, and I encourage you to talk through ideas with other students. But outright copying is 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, are violating the ECU academic integrity policy.

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.

Other Policies

No incompletes will be issued in this course except for extraordinary circumstances, and even then only if you are nearly done already, and have done work of acceptable quality, so that it is realistic that you can pass the course.

All homework should be handed in by the start of class (2pm) on the day it is due. All homeworks will receive an automatic 48 hour extension, but questions about the homework will not be answered during the extension period, so ask in advance! Extensions will also be granted for documented medical emergencies (i.e., not for regular medical checkups or other non-emergency visits). Otherwise, homework will not be accepted after the above-mentioned automatic 48 hour extension.

If you know you will miss an exam, please contact me as soon as possible. You will have to take a makeup exam. This exam must be taken within 48 hours (on either side) of the scheduled exam, so I can get the exams graded in a timely fashion and grades returned. If this is the final exam, the makeup period will be determined based on the exam schedules of those that need to reschedule the exam.

There is no official attendance policy for the class. In my experience, success in the class is directly correlated with class attendance, so I highly recommend that you attend and actively participate. For online students, I recommend that you

watch the lecture the day it is given and send any questions before the next class session (so I can address them in class). Falling behind will make the course more difficult than it would otherwise be.

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/>.

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

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.