SENG 6250: Software Systems Modeling and Analysis
Fall 2016

Class Meeting	Tuesday and Thursday, 2:00pm – 3:15pm Brewster Building, Room B-203 (Global Classroom)
Instructor	Dr. Mark Hills
Office	Science & Technology Building, C-110
Office Hours	Wednesday 1pm to 3pm Thursday 10am to 12pm Friday 1pm to 2pm Feel free to make an appointment with me if you need to meet online or outside of these hours.
Phone	252-328-9692
Email	hillsma@ecu.edu (response within 24 hours during the week, longer on weekends)
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 potentially 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. It also helps if you have experience similar to that gained in SENG 6245, since it will help to give you an appreciation of the need for the techniques discussed in 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, 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 are two required textbooks for the course.

The first is *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/. You can also download a PDF of this book for free through the ECU library.

The second is *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.

Books on other topics, such as UML, could be useful, and there are also a number of online tutorials on these topics. Feel free to post links to anything useful that you find and to look back at your SENG 6230 book for guidance on software engineering topics we discuss. 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

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.

There will be one midterm exam given during the course. The date of this exam is **Thursday, October 13th**, from **2pm – 3:15pm** in our normal classroom. More details about the actual contents of the exam will be available closer to the exam date.

The final exam for the course will be on **Tuesday, December 13th**, from **2pm – 4:30pm** in our normal classroom. More details about the exam will be available closer to the exam date. The last regular day of class, Thursday, December 1st, 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 homework assignments, the midterm and final 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%

We are currently scheduled to have **seven homework assignments,** each weighted equally. The group project will involve research in an area related to the topic of the course. Project teams **must** be made up of both on-campus and off-campus students and will be assigned randomly. We will discuss team size and number of teams once we have a good idea of how many students will be taking the course. Projects will include both a written final report and a final presentation as well as various deliverables along the way. Due dates for these deliverables will be posted shortly after the beginning of class.

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 you have a realistic change to pass the course.

All homework solutions and project deliverables are due by the posted due date. If for some reason you are not able to complete the assignment on time, you must contact me directly with an explanation and request an extension. If something comes up and you are having trouble keeping up with the class, talk to me right away, ***don't wait until the end of the semester!***

Course participation is an important part of the course. If you do not participate you will make it harder to have the kinds of discussions we need to make the class interesting. Please read the assigned readings in a timely fashion, and come to class prepared to talk.

Success in the class is directly correlated with class attendance, so I highly recommend that you attend and actively participate. If for some reason you cannot attend, please let me know – my expectation is that you will watch the lecture online and ask me questions about the material if you have any. 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. I will be taking attendance at regular points in the class for my own records.

To encourage use of the discussion groups on Blackboard, I will not answer any questions about the course material using either email or Skype. These questions ***must*** be posted in the discussion groups. You are welcome to contact me directly with questions about grading or other personal class-related items, or to discuss

the material with me more fully if I agree to take it "offline" from the discussion groups. I will answer questions about the syllabus, but will not answer questions where the answer is already clearly given in the syllabus.

All code, test scripts, and other software artifacts for your assignments must be stored in an online source repository set up on GitHub. Therefore, you must create a GitHub account if you do not already have one. Any code needed for the assignments will be distributed using either GitHub repositories or Blackboard. Written assignments must instead be scanned as PDFs and uploaded to Blackboard.

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

Lecture Videos

The lectures in this course will be recorded using MediaSite software and made available to all students enrolled in the course through the campus MediaSite server. They may also be viewed by professors in the Department of Computer Science. You must sign a consent form to acknowledge that you give permission to be recorded and for ECU to use these recorded images "for any purpose whatsoever" (language from the release form). If you do not wish to do so, you must notify me. Note that group presentations will be recorded, so you should plan to be directly recorded at some point during the semester; generally, you will only appear on the recording from behind (since the camera is focused on me).

The recommended language from the release form is as follows:

> "This class will be recorded and broadcast on the Internet and/or distributed on other electronic media now or hereafter known. These recordings may contain your image and your voice. You must notify me as soon as possible if you DO NOT want your image and your voice contained on the recording. If you do not so timely notify me, then you understand and authorize that as part of this class we may record your image and record your voice and broadcast it on the Internet and/or distribute it on other electronic media now or hereafter known."

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.