

SENG 6250: Software Systems Modeling and Analysis

Spring 2021

Instructor	Dr. Mark Hills
Scheduled Class Time	Section 001: Tuesday, Thursday: 11:00am - 12:15pm Class meets mainly online, but we may occasionally also meet in Brewster B-305, the assigned room for the course. If we do, I'll post this on Canvas. You can still attend online in those cases. Section 601: Online
Instructor Office	Science & Technology Building, Room C-110
Office Hours	Tuesday 3:30pm to 5:00pm Wednesday 10:00am to 12:00pm Thursday 3:30pm to 5:00pm Feel free to make an appointment with me if you need to meet outside of these hours. I will be available on MS Teams during these times, and I may also be in my office (but please check first).
Instructor Phone	252-328-9692
Instructor Email	hillsma@ecu.edu , responses within 24 hours during the week, potentially longer on weekends or over holidays
Course Web Page	Canvas: https://ecu.instructure.com

Course Description and Objectives

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; model-driven software engineering techniques including domain-specific modeling languages, model to model transformations, and model to text transformations; and lightweight program analysis techniques, such as those used in continuous integration pipelines and code review systems for identifying potential problems in source code.

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

- apply modeling and model-driven techniques for building and understanding software systems;
- use and modify tools such as Eclipse EMF, JPF, JBMC, Error Prone, and SpotBugs to build, explore, reason about, analyze, verify, and transform programs and models of programs;
- engage with, and potentially add to, the research literature on modeling and model-driven software engineering that appears in venues such as the MODELS conference.

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 6240 and/or SENG 6245, since that experience will help to give you an appreciation of the need for the techniques discussed in this course.

Textbooks

The required text for this course is *Model-Driven Software Engineering in Practice*, 2nd edition, by Brambilla, Cabot, and Wimmer. This book is available to read, for free, through the ECU library. You can find it at <https://tinyurl.com/yxm7krm2>. You can also purchase the book from Amazon if you would like a physical copy. As of now, it is around \$55. Finally, if you want to read the book electronically while you are offline, you should be able to download a PDF of the electronic edition, available at the link given above.

Other course material, including references to books, conference or journal articles, tutorials on the web, and videos will be posted as the course progresses.

COVID-19 Protections, Considerations and Policies

All students are required to comply with the [University Regulation on Face Coverings](#), including the wearing of face coverings in classrooms, lecture halls, and any other instructional areas and campus locations. Students with disabilities and medical conditions, as documented with the Department for Disability Support Services, may seek alternate accommodations. For additional information please consult the [Office of Students Rights and Responsibilities Website](#).

ECU wants to provide the safest classroom environment possible this semester. Therefore, we will be observing the following class policies related to your health and safety per [Pirate Nation Guidelines](#):

- All students are required to comply with [University Regulation on Face Coverings](#). No student will be allowed into the classroom without a face covering or mask worn properly over both the mouth and nose. You must wear a face covering properly the entire time you are in class.
- If you do not have access to a face covering, you may obtain a mask from Dowdy Student Store, Pirate Pantry, or another provider of masks.
- Maintain appropriate social distancing in hallways or common spaces prior to or after class.
- Follow all posted signage related to entry, exit and pedestrian flow within classroom buildings.
- Clean your desk surface with disinfectant when you arrive and before you leave class.
- Be prepared to sanitize high-touch surfaces, such as chairs and desks. For additional information please consult the [ECU's Cleaning and Disinfecting Hand-out](#).
- Maintain a minimum of 6 feet between you, other students and the instructor when entering, leaving and during class.

- Sit in your assigned seat.
- Conduct a daily health screening using the CDC's [COVID-19 symptoms](#) list.
- Do NOT attend class if you answer yes to any item on the list or if you are experiencing symptoms of any illness.

COVID-19 Attendance Policy

- The instructor will take attendance and utilize a seating chart in order to facilitate contact tracing, should this become necessary.
- Students should make every effort to participate in class activities, such as exams or key assignment due dates.
- Missing class does not automatically result in extensions on assignments or exam due dates.
- There is a clear correlation between attendance/participation and your grades.
- It is the student's responsibility to seek out the instructor and other classmates to obtain the information (e.g., lecture notes, relevant announcements, etc.) if they missed class.
- Students should maintain regular communication with instructors regarding their health status and communicate any changes in their ability to complete coursework and academic responsibilities immediately.
- If you become ill, see the guidelines in the [Return of Pirate Nations for Students](#). No unnecessary visits to health facilities or documentation will be required as per [ACHA 2020](#).
- You may at any time consult with your advisor or the instructor about whether to request an Incomplete ([ECU Faculty Manual IV.VIII.E Grade of Incomplete](#)) or a Withdrawal ([ECU's Withdrawals Policies](#)).

COVID-19 DSS Information

East Carolina University seeks to comply fully with the Americans with Disabilities Act (ADA). Reasonable accommodations will be made for students with verifiable disabilities. In order to take advantage of available accommodations, students must be registered with the Department for Disability Support Services located in Slay 138, 252-737-1016. [Accommodation Information & Processes](#).

Additional DSS student resources can be found at: <https://accessibility.ecu.edu/students/>

COVID-19 Office Hours

Office hours will be conducted online. Students should refer to Canvas for posted office hours and for instructions to schedule an appointment with the instructor.

Missed Instructional Time in the Event of a Disruption

Making up missed instructional time in this course will follow [ECU's Policy for Making Up Missed Instructional Time Due to Suspension of Instruction](#).

Grading

Students will be evaluated based on a combination of class activities, including homework assignments, quizzes, discussions, the midterm and final exams, and a research project/lesson. 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, Reading Quizzes, Discussions, and In-Class Activities	40%
Midterm Exam	20%
Final Exam	20%
Research Project/Lesson	20%

Homework assignments will be due roughly every two weeks. Quizzes will be posted periodically, focused on assigned readings. Discussions will also be posted periodically on Canvas. More details about the homework, the quizzes, discussions, activities, and the research project/lesson will be made available during the course.

Exams

The midterm exam for the course will be available from Wednesday, March 3 to Friday, March 5 on Canvas. The final exam for the course will be available from Monday, May 3 to Wednesday, May 5 on Canvas (final exam day is officially Tuesday, May 4). More details about the exams will be available closer to the exam dates. Both are timed exams. **Note:** this means you will not need a proctor for this 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 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. That does not mean you are not allowed to discuss your ideas with other students. Working together 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.

Other Policies

All homework solutions 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.

Any code needed for the assignments will be distributed using either GitHub repositories, GitLab repositories, or Canvas. Written assignments must instead be scanned as PDFs and uploaded to Canvas.

Copyright on Course Materials

Course materials, including programming assignments and lecture notes, can only be publicly shared or used for commercial purposes if given permission. This is covered by ECU copyright regulations, available at <http://www.ecu.edu/pr/10/40/02>, which state the following:

7.1.3. Notes of classroom and laboratory lectures, syllabi, exercises and other course materials taken by Students shall not be deemed Student Works, may only be used for personal educational purposes, and shall not be used for commercialization by the Student generating such notes or by any third party without the express written permission of the author of such Works. Violation of University Policy may be grounds for disciplinary action pursuant with the ECU Student Conduct Process.

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 announce this on Blackboard.