

CSCI 8710: Modern Software Development Methodologies

Class Information

- The main objective of this course is to introduce advanced object-oriented technologies and other modern methodologies for developing software systems.
- Meeting time: TR 5:30 – 06:45 PM
- Classroom: PKI 261

Instructor

- Instructor: Dr. Myoungkyu Song
- Office: PKI 173C
- Email: myoungkyu@unomaha.edu
- Office Hours: 9:30 – 10:30 AM on Friday

Students in the waitlist

- If you are in the waitlist and want to request the course registration for a critical reason, please discuss with an academic advisor *Farida Majid* (fmajid@unomaha.edu) or Leslie Planos (lplanos@unomaha.edu).
- Critical reason
 - The student's degree progress

Textbook

No Requirement But Recommend

- Software Engineering (10th edition) by Ian Sommerville, Addison-Wesley, 2015
- Lars Vogel, “Eclipse Rich Client Platform: The complete guide to Eclipse application development (Third edition)”, Eclipse Foundation, 2015.
- Alex Blewitt, “Eclipse 4 plug-in development by example beginner’s guide.” Packt Publishing, 2013.
UNO Criss Library: [eBook](#)
- Other reading materials, if any.

Learning Objectives

At the end of this course, students who complete this course

- Should be able to apply the practical skills and tools in analyzing and solving non-trivial problems in different fields of study
- Be able to apply the lessons learned to real-world software projects

Course Content

- The course provides an overview and in-depth understanding of the main concepts and practical applications
 - Software plug-in component development environments
 - Program analysis frameworks
- The course covers several concepts of modern software engineering technologies
 - Software Reuse and Service Oriented Systems
 - Component-based Software Engineering

Evaluation

Project & Exam	Percentage
Term Project	15%
Midterm Exam	20%
Final Exam	35%
* Quiz/Homework/Exercise * Writing a research paper, including Abstract Introduction Literature review Approach Evaluation Plan Conclusion * Presenting an existing paper	30%

Exam dates

- Midterm – classroom, TBD
- Final – classroom, Thursday, December 14, 5:30pm

Late Homework Policy

- Late homeworks will get a 20% deduction per day, for each day past the due date.
- For online submissions, we will follow the time stamp as reported by Canvas.
- For example, if the due date is October 24, a submission on October 25 12:01 AM will get a 20% deduction.

Academic Integrity

Cheating will not be tolerated for project assignments, exams and other assignments. For formal policies about cheating and plagiarism, consult the [UNO Student Policies](#) and [Department of Computer Science Policies and Procedures](#).

Term Project



Term Project: Organization

- Students will be asked to self-organize into teams consisting of three members
 - Individually or in groups of up to three
- Writing a research paper

Term Project: Writing a Research Paper

- Required to write a research paper
- Individually or in groups of up to three, will engage in a term-long project to advance the state of the art of one of the **software engineering topics**.
- The students will
 - Identify a shortcoming of today's techniques (reading list),
 - Review the relevant literature, and
 - Propose a novel technique that addresses the shortcoming.
- Finally, the goal is for students to write a research paper describing their work worthy of submission to a research conference.

Paper Format

- Format
 - Short paper with 6 pages
 - 1st page: Abstract and Introduction
 - 2nd page: Motivating Example
 - 3rd and 4th pages: Related Work
 - 5th page: Proposed Approach
 - 6th page: Evaluation Plan and Conclusion
 - Two columns documentation
- Template
 - Download in Canvas
 - Go to Menu: Modules > Research Paper Writing

Term Project: Writing a Research Paper

1. Review the relevant literature in the reading list



2. Identify a shortcoming of today's techniques

3. Propose a novel technique that addresses the shortcoming

Major Deadlines for Term Project

Date	Deliverable
9/6	(P1) Team composition. Submit the team name and members.
12/5	(P2) Term project presentation (15 mins). Submit slides.
12/7	(P3) Research paper submission.

Grading Term Project

	Requirements
Page 1	Abstract: $\frac{1}{4}$ page Introduction: $\frac{3}{4}$ page
Page 2	Motivating Example: 1 page See Section II. Motivating Example at the below link. http://dl.acm.org/citation.cfm?id=3097448
Pages 3 and 4	Literature review: 2 pages
Page 5	Approach: 1 page
Page 6	Evaluation Plan: $\frac{3}{4}$ page Conclusion: $\frac{1}{4}$ page
Extra page(s)	References

Research Paper Presentation



Research Paper Presentation

- Reading and presenting to the class existing research from recent premier conferences and journals
 - Static, dynamic, and speculative analyses.
 - Model inference, model checking, and formal verification.
 - Bug localization.
 - Mutation and regression testing, and symbolic execution.
- The list of papers in Canvas.
 - Module > Research Paper Presentation > Reading List
- Each paper has specific presentation day in October or November associated with it.
- Each student must sign up to present **three papers**.

Sign Up for Paper Presentation

- To sign up, look for the Paper Selection Assignment on Google Drive Spreadsheet.
 - Module > Research Paper Presentation > Paper Selection Assignment
- All paper presentations will be 15-20 minutes.
- All presentations will be during regular class times.
- To make the most well-educated choices, you should take at least a brief look at each paper and read the abstract.

Paper Selection Assignment

- Due: 9/6, 11:59 PM
- Sign-ups will open at 8/30 and will be done on a first-come first-served basis.
- The paper presentation will be done in groups of three students.
- The groups will be determined by who signs up for each paper.
- Each paper has three slots for students to sign up for.
- Every paper will end up with a team of three students to work as a team for the presentation.

Paper Selection Assignment

A presentation team

Paper	Presentation date	Student 1	Student 2	Student 3
1. Title	11/2	John Doe	Team member	Team member
2. Title	The first presentation paper			
3. Title				
4. Title	...			
5. Title	The second presentation paper	John Doe	Team member	Team member
6. Title				
7. Title	...			
8. Title	The last presentation paper	John Doe	Team member	Team member
9. Title				
...				

Paper Selection Assignment

Paper	Presentation date	Student 1	Student 2	Student 3
1. Title	11/2	John Doe	Team member	Team member
2. Title	...			
3. Title	...			
4. Title	...		<ul style="list-style-type: none"> Possibly, your team size can be less then three. It is possible to reschedule the presentation date depending on the course schedule. 	
5. Title	...	John Doe		
6. Title	...			
7. Title	...			
8. Title	...			
9. Title	...	John Doe		
...				

Paper Selection Assignment: Deliverables

- Using the file, Paper Selection Assignment on Google Spreadsheet, sign up to present three of the research papers by the due date.
- Enter three paper titles on Canvas.

Submission in Each Presentation Day

Student	Artifact
Presentation Speakers	Submit a summary of the research paper in class. Submit the presentation slide file in Canvas.
Audience	Submit a summary of the research paper in class.

Lecture Overview

