STEVENS
INSTITUTE of TECHNOLOGY
THE INNOVATION UNIVERSITY®

SSW 322: Software Engineering Design VI

Course Logistics
2020 Spring

Prof. Lu Xiao
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Babbio 513
Office Hour: Monday/Wednesday 2 to 4 pm
Software Engineering
School of Systems and Enterprises

Course Basics

- Monday 9:00-9:50 am / Wednesday 11:00 am-1: 30 pm
- Location: Babbio 304
- Instructor: Lu Xiao lxiao6@stevens.edu
  - Office Hours: Babbio 513
  - Monday and Wednesday 2:00-4:00 PM
- Grader: Michael Ameer <mameer@stevens.edu>;
- Course Web Address: https://sit.instructure.com/courses/37284
- Prerequisite(s): SSW 315 Object Oriented Software Engineering (or equivalent) and Programming experience

Textbooks and References

- **Text Books:**

  1. User-Centered Design by Travis Lowdermilk, 2013 (L) ISBN 978-1449359805
  2. Software Engineering Design: Theory and Practice by Carlos Otero ISBN-13: 978-1439851685 ISBN-10: 1439851689
  3. Domain-Driven Design by Eric Evans; 4th Edition, 2004 (E) ISBN 0321125215

- **Recommended Reading:**

  - Engineering Design: A Systematic Approach by Pahl, Beltz, Feldhusen and Grote, 2007 (P) ISBN 978-1-84628-319-2
  - An Introduction to Software Architecture, David Garlan and Mary Shaw, January 1994 http://www.cs.cmu.edu/afs/cs/project/able/ftp/intro_softarch/intro_softarch.pdf

What this course is about?

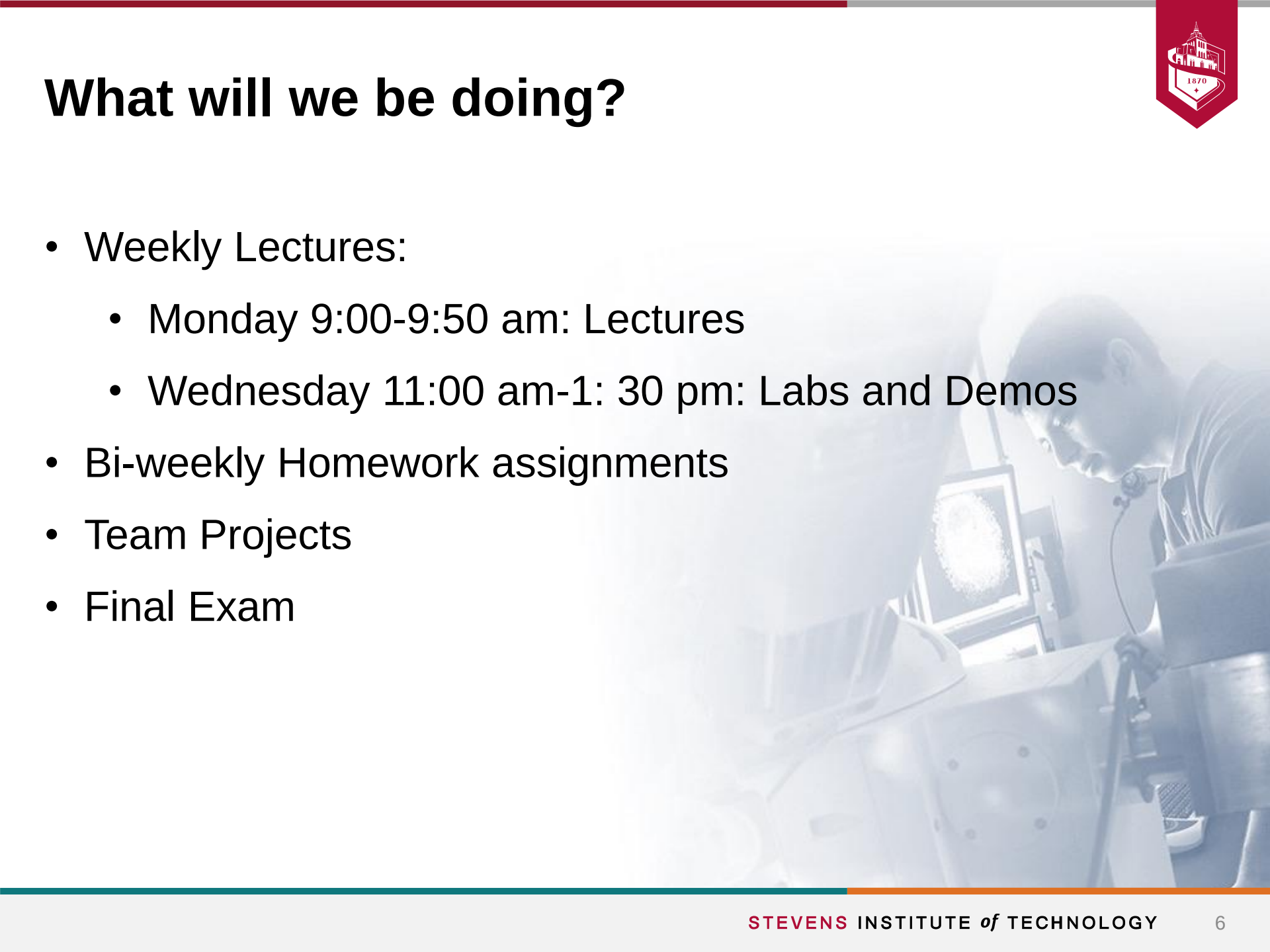
- This course teaches **software design and evolution** in the context of engineering design.
- This course introduces **user centered design and domain centered design**.
- You will **get your hands dirty** by designing, implementing, and maintaining a user-friendly application.
- This course gets you prepared for your senior design project.

After this course, you will be able to …

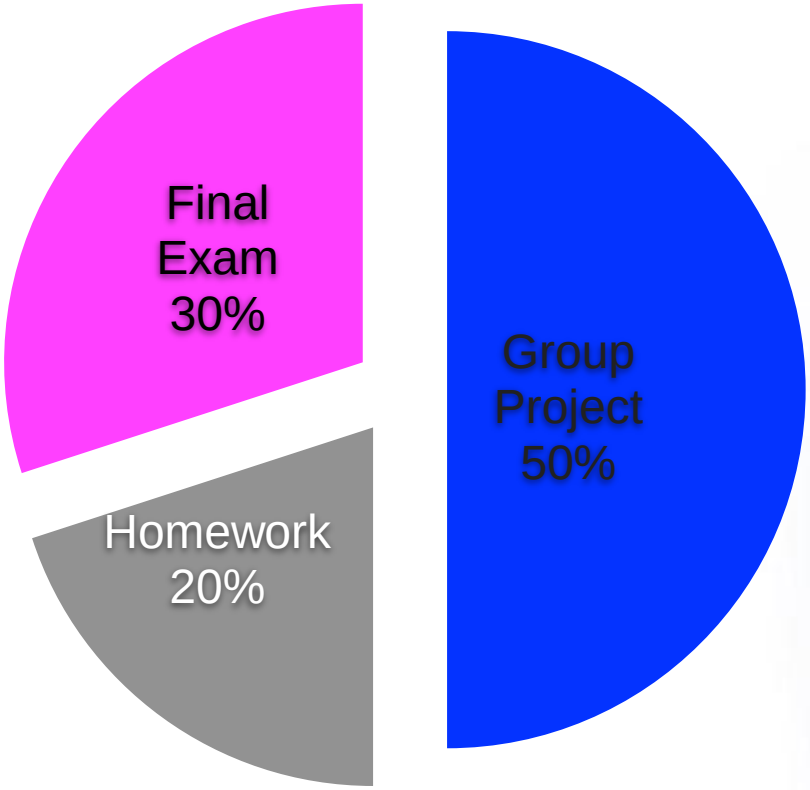
- Apply Engineering Design, User Centered Design and general design to the problem you are trying to solve.
- Develop and apply domain-centric design solutions for problem specifications at hand.
- Implement designs following the well-accepted SOLID object-oriented design principles for complex and practical problems.
- Assess, criticize, and improve the design of a software system to improve the ease of code maintenance in its evolution.
- Present and communicate design decisions in oral and writing fashion.

What will we be doing?

- Weekly Lectures:
  - Monday 9:00-9:50 am: Lectures
  - Wednesday 11:00 am-1: 30 pm: Labs and Demos
- Bi-weekly Homework assignments
- Team Projects
- Final Exam



How will you be graded?



- You have 13 weekly homework
- You have a course project through out the semester. The project is designed with 5 incremental milestones.
- You will have a final exam by the end of the semester. It is a close book, close note, in class exam.
- Grades will be posted on Canvas

Bi-Weekly Homework

- HW1-Reading the Parnas Paper
- HW3-UX Research Reading and Presentation
- HW5-The Alarm-Clock-Radio Design
- HW7-Maze-Game
- HW10-Abstract Factory Pattern
- HW12-Decorator Pattern

Weekly homework

- All homework will be done and graded individually
- You may ask me questions about the homework before turning it in, but all work must be your own.
- Be sure to answer all questions in your own words---don't copy from other sources.
- **Due date is Monday 11:59 pm**

Course Project

- It is a ***group*** project. Try to form groups of 3 to 4 people and email Michael the members of your group. Or I can assist with group formation if needed.
- It is a ***term long*** project broke down into 5 parts. The detailed requirements of each part will be given along the semester.
- It can be implemented in ***your preferred language.***

Course Project Cont'd

- You have three options for your project

Project 1: Test/Survey system: In this project, you need to create a test/survey system. Users are in two roles: creators and takers. The creators can create, save, modify a test/survey. The taker can take a test or a survey.

Project 2: Meal Sharing application: In this project, you need to create a meal sharing application. Users are in two roles: host and guest. A host can post information about a meal he/she cooked and invite people to join for a meal. A guest can browse meal information in nearby location and request to join a meal.

Project 3: Exchange4Students application: In this project, you need to create a platform where college students can sell and buy items. The users also have two roles: seller and buyer. A seller can post information about an item he/she wants to sell. A buyer can browse and buy items that he/she needs.

- The system should have a graphical, user friendly interface.

Course Project Cont'd

Team Forming	3 to 4 people
Milestone 1	User Interface Prototype
Milestone 2	System Modeling and Design
Milestone 3	Creating and Displaying a Survey/Test
Milestone 4	Storing, Loading, and Modifying, and Taking a Survey/Test

Course Project Cont'd

Team Forming	3 to 4 people
Milestone 1	User Interface Prototype
Milestone 2	System Modeling and Design
Milestone 3	Posting and Displaying Meal Information
Milestone 4	Reviewing and Requesting to Join

Course Project Cont'd

Team Forming	3 to 4 people
Milestone 1	User Interface Prototype
Milestone 2	System Modeling and Design
Milestone 3	Posting and Displaying Items to Sell
Milestone 4	Browsing and Purchasing Items

Project Management

- Group project should be managed and hosted on GitHub
  - No need to zip/submit source code on Canvas
  - This facilitates team collaboration (everyone's contribution will be automatically recorded)
  - This is most close to you will be using in practice

How your project will be graded?

- You will be graded for each milestone.
- Each milestone will be done/graded in two aspects:
  - The technical work, e.g. source code, design artifacts
  - The group presentation, which happens on the due Wednesday
- Each group will get the same grade
- Individual's grade will be prorated by a peer review grade (due the Wednesday mid-night)

Course Schedule

1	Course Logistics and Introduction
2	UX-UCD Design
3	OO Paradigm
4	UML
5	Domain Driven Design
6	Clean Code
7	Design Pattern-AF-FM-Singleton
8	Design Pattern-Decorator
9	Design Pattern-Strategy
10	Design Pattern-Builder-Facade-Observer
11	SOLID
12	Code Smell
13	User Authentication and Access Control
14	Software Security
15	Final Review
16	Final Exam

*This schedule may subject to change

Late Policy

- All individual homework are due at the same time each week, **Monday 11:59 pm**, so you can plan your schedule
- All course project incremental are due at the same time every two/three weeks, **Monday 11:59 pm**
- Let me know **in advance** if you need extra time
- Otherwise late assignments will be assessed a ***5% penalty*** for EACH 24 hour period that the assignment is late

Cheating will NOT be tolerated

- ALL work is expected to be in your own words
  - all homework answers
  - all programming
  - all exam answers
- Copying from any source is considered cheating
  - providing a citation does not excuse this
- Consequences of cheating may include:
  - receiving a grade of 0 for an assignment
  - receiving a grade of "F" for the course
  - expulsion from the university

Keep an Eye on the Canvas

- All course materials can be found on canvas modules
- Regular announcements
- Course Overview
  - Syllabus and course schedule
- Weekly Module
  - Lecture slides
  - Homework assignments
  - Project incremental assignments
  - Project milestone demo schedules
- Your grades: you should proactively resolve any issues ASAP