

Fall 2017  
**SE 350: Object-Oriented Software Development**

Instructor: Mona Rahimi

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Office Hours: Tuesday – 4.30pm to 5.15pm

Thursday – 5.30 pm to 6.15pm

**Course Objectives:**

To expose students to principles and patterns of Object-Oriented Design and teach them to engineer elegant software systems. Students will become familiar with a wide variety of design patterns and Object-Oriented principles, will understand when each is relevant for use, integrate them into the design, and implement them as code. Students will develop greater proficiency in Java, and use of design patterns. During this course students will design, develop, and test a non-trivial application, describe their work in a verbal presentation, and develop a professional portfolio of their work.

**Class Schedule:**

Tuesday from 5.45pm-9.00pm at Lewis 1217.

**Homework:**

Three homeworks will be assigned as shown in the class schedule. Late work will be accepted up to one week after the deadline. 10% penalty if submitted within 48 hours. 20% penalty if submitted within 7 days. Work will NOT be accepted beyond that without a doctor's note. Please note that (1) homework assignments and deadline dates will NOT change, and (2) you are expected to complete all homeworks.

You should expect to spend an average of 6 hours working on programming each week. The more effort you put into this course, the more you will take-away, so I encourage you to go above-and-beyond wherever possible.

**Reading List:**

- (Required) Object-Oriented Design and Patterns, 2nd edition, Horstmann, John Wiley & Sons, 2005. ISBN: 978-0-471-74487-0
- (Optional) Head First Design Patterns, Freeman, O'Reilly Media, 2004. ISBN: 978-0596007126
- (Optional) Design Patterns, Gamma, Helm, Johnson & Vlissides, Addison-Wesley/Pearson, 1995. ISBN: 978-0201633610
- (Optional) Design Patterns Explained: A New Perspective on Object-Oriented Design, 2nd edition, Shalloway & Trott, Addison-Wesley/Pearson, 2005. ISBN: 978-0321247148

**What if you get stuck?**

This is a programming course and you may find some of the assignments challenging. There are several things you can do if you get stuck:

1. Avoid getting stuck in the first place. Attend lectures, read the chapters, and most importantly program and test iteratively. We will discuss this in class.
2. Come to office hours and ask for extra help. Don't come to office hours with a big ball of mud. Come with specific questions. ALWAYS be able to revert to the previous version of the code (save your working code frequently). If you break something and you can't fix it – revert and start over. Save frequently – every time you achieve a small success.
3. Start your program assignment early. Don't wait for the last 24 hours.
4. Post a question to the homework discussion forum on D2L.
5. Use CDM Tutoring service for your Java problems. Find more regarding tutoring services at <http://www.cdm.depaul.edu/Current%20Students/Pages/TutoringProgram.aspx>

### **Grades:**

- Homework: Three assignments each worth 10 points. (30 points)
- Attendance: (5 points)
  - Attendance is required for this course. Attending lectures and lab activities do help you to better understand the home works.
  - Attend class and participate in the lab activities. Sign the attendance sheet which will be made available starting in Week 2. If you skip the occasional lecture make sure you complete the lab activity/quiz for that week.
- Exams:
  - Midterm (15 points)
  - Final (20 points)
- Project:
  - GUI and UML Design (5 points)
  - Presentation (5 points)
  - Final Project Submission (20 points)

There will be **no extra credit**, so please make sure to do all assignments and keep up with the class. For the most part, people who fail this class are people who don't do the assignments and/or don't attend/view lectures.

### **Schedule:**

You can see a draft for schedule below. The lecture topics from weeks 4 onwards are still flexible. The schedule will be updated on D2L.

## SE-350 (Session 701)

NOTE: Specific topics from Week 4 on may be rearranged.

	Tuesday		Reading	Homework/ Exams
1	Sep 12th	Course Introduction <i>Java Review</i> : Basic UML Inheritance/Override Lecture1a.pdf	<u>Design Pattern: Strategy</u> <i>Java Review</i> : Java Loops & Iterators Lecture1b.pdf Activity Sheet #1	Horstmann: Chapter 1 Headfirst: Chapter 1
2	19th	Lab # 1: Basic Strategy Pattern (Lab1.pdf)- WorldPopulation Homework 1: "Battleships" assigned	<u>Design Pattern: Observer</u> <i>Java Review</i> : Date Class Lecture 2b.pdf Activity Sheet # 2	Horstmann: Chapter 3 Headfirst: Chapter 2
3	26th	Introduction to JavaFX Lecture 3a.pdf	Lab #2: Java BASIC GUIs Homework 2: "Christopher Columbus" assigned	Horstmann: Chapter 4 Horstmann: Chapter 9 (no synchronization)
4	Oct 3rd	Programming by Contract Lecture 4a.pdf Hands-on Design Activity Activity Sheet #3	<u>Design Pattern: Composite</u> <i>Case Study</i> : Fragile Base-Class Lecture 4b.pdf	Headfirst: Chapter 9
5	10th	SOLID Principles Lecture 4a.pdf Homework 3: Composite Assigned (Read Horstmann Chapter 3)	Lab # 3: Handling Events Mouse Events (Read Horstmann Chapter 2)	<u>Wednesday 4th</u> @Midnight (Homework 2 due) 10%
6	17th	<u>Midterm Exam Participation Mandatory</u>	<u>Design Pattern: Adaptive Patterns</u> (Decorator, Façade, Adapter) I/O Streams (Serialization/Deserialization)	Headfirst: Chapter 3 (Decorator)
7	24th	<u>Design Pattern: Factory Method and Abstract Factory</u> Examples from Chip's Challenge Final Project Assigned	Lab #4: Practice with Factory Method & other patterns we've learned, MVC	Headfirst: Chapter 4 (Factory patterns) Horstmann: Chapter 5
8	31th	<u>Design Pattern: Singleton</u> Anonymous Classes	<u>Design Pattern: Command</u>	HeadFirst with Patterns Chapter 5 (Singleton), Chapter 6 (Command)
9	Nov 7th	<u>Design Pattern: Visitor</u>	<u>Design Pattern: State</u> Software Development Processes	HeadFirst with Patterns Chapter 9 (Collections) Horstmann Chapter 2 (SDP)
10	14th	<u>Design Pattern: Template</u> General review of patterns	<u>Game Jam Participation Mandatory</u>	HeadFirst with Patterns Chapter 8 (Template)
	21st	<u>Final Exam</u> 6:00PM-8:15PM		<u>Sunday 19th</u> @Midnight (Final Project due) 20% Final Exam: 20%

\* In addition to the assigned readings, some examples in the lecture slides will be taken from Horstmann

\* The remaining 5% of the grade is the attendance grade.