

SE450 Syllabus – Object-Oriented Software Development

Spring 2018: Sections 901/910

Instructor: Luai Mahmud
Email: lmahmud@depaul.edu
Address: School of Computing, DePaul University
 243 South Wabash Ave
 Chicago, IL 60604-2301
Class Page: [Section 901/910] <https://d2l.depaul.edu/d2l/home/621743>
Class Hours: Wed 5:45-9:00 in Lewis 1514

Overview

We will study object-oriented design and implementation. Among the topics of the course are:

- Principles of object-oriented programming languages.
- Principles of object-oriented design.
- UML class, object and sequence diagrams.
- Testing methodologies.
- Design Patterns.

Java and the UML will be used for source code examples, homework assignments, and the exams.

Objectives

By the end of this course you should:

LO-1. *Design Patterns*. Students will be able to design and implement an executable solution to a given problem in a programming language using the most suitable set of common software and architectural design patterns.

LO-2. *Object-Oriented Design Principles*. Students will be able to design and develop software applications using object-oriented design principles.

LO-3. *Visual Modeling*. Students will be able to model a software solution visually using UML sequence and class diagrams.

LO-4. *Object-Oriented Programming Paradigm Principles*. Students will be able to effectively translate design patterns and object-oriented design principles into an object-oriented programming language.

LO-5. *Implementation*. Students will be able to apply advanced object-oriented programming language features/capabilities to design and implement a given software application using object-oriented best practices.

LO-6: *Testing*. Students will be able to apply appropriate software testing techniques at the module level.

Lecture Plan

(these may change to better accommodate the specific class)

- Week 1:
 - Course Admin
 - Basics: Part I
- Week 2:
 - Basics: Part II
 - SOLID Principles
- Week 3
 - Strategy
 - Java and Testing
- Week 4
 - Observer
 - Decorator
- Week 5
 - Object Creation
 - Singleton
- Week 6
 - Midterm Exam
- Week 7
 - Command
 - Adapter
 - Façade
- Week 8
 - Template Method
 - Iterator
 - Composite
- Week 9
 - State
 - Proxy
- Week 10
 - State Pattern
 - Null Object
- Final Exam

Note: We will try to cover a topic in Java every class.

Prerequisites

You must have the following:

- CSC403, CSC383 or CSC393 or equivalent courses on data structures (linked lists, stacks and queues, trees, graphs priority queues, hash tables). You should have written some code in this class. You should be happy implementing simple linked lists, stacks, queues, and trees. You should be happy using all of the above, plus priority queues and hash tables.
- CSC402, CSC 224 (or 211 and 212) or equivalent experience programming in Java.

This course is not an introduction to Java.

Textbooks

There is no required textbook for this course. However, a series of readings will be assigned each week from a variety of sources. These assigned readings are not optional and should be read before the class meeting with which they are associated. As there is no textbook, reading the posted materials is critical to perform well in this course.

Head First Design Patterns

Authors: Eric Freeman, Elisabeth Robson, Bert Bates, Kathy Sierra 1st Edition, 2004
ISBN: 9780596007126

Design Patterns Explained

Authors: Alan Shalloway, James Trott 2nd Edition, 2005 ISBN: 9780321247148

Attendance

You are responsible for understanding the material presented in class.

You are responsible for any announcements made in class or on D2L.

You must attend the midterm and final exams (unless you are in the 910 - DL section).

- The midterm will be held May 02, 2018 in class from 6:00 PM to 8:15 PM.
- A final exam will be held June 06, 2018 in class from 6:00 PM to 8:15 PM.

A medical note will be required for an absence from exams. Business trips or vacations are not valid reasons for missing the exams.

Block out these dates now!

Online students can take exams remotely. Online dates will likely include the weekend before the in-class date.

Class materials and recorded lectures are available online. Exams are proctored.

Read the policies here:

<http://www.cdm.depaul.edu/onlinelearning/Pages/OnlinePolicies.aspx>

If you live in Chicago, you can take the exams at the Loop or Suburban campuses. If you live outside the Chicago area, you will need to find a proctor.

Your online section is paired with an on-campus section. These classes are recorded and uploaded into the Course Management system so you can view them within 24 hours of the live class. **The first class is March 28, 2018.** The lecture will be available online the following day.

Assessment

There will be four initial weekly assignments before the midterm. After the midterm you will be given a final project with two parts followed by the final. The course grade will be computed as follows:

- ☐ Homework: 25%
- ☐ Midterm Exam: 25%
- ☐ Final Project: 25% (It is an individual, not group, project)
- ☐ Final Exam: 25%

Numerical grades correspond to letter grades roughly as follows:

93-100 = A

90-92 = A-

88-89 = B+

83-87 = B

80-82 = B-

etc...

Homework from the following week is due each week by 11:30 PM. It's strongly advised you don't wait to do it after class the following week.

Homework assignments must be submitted through the D2L system. Email submissions will not be accepted.

Program submissions will be assessed on whether they achieve the set task and the quality of the code.

The midterm and final will be cumulative.

There will be no make-up exams nor extra credit assignments. If there is an extreme emergency and you must miss an exam, you must notify me in advance and provide documented evidence of the emergency.

Students in DL sections may take the course remotely. They may take the exam at times different from the in-class section, usually within a few days. Exact details will be provided on D2L closer to the exam date.

Course Policies

The syllabus may change as needed for the quarter.

Online Course Evaluations

Evaluations are a way for students to provide valuable feedback regarding their instructor and the course. Detailed feedback will enable the instructor to continuously tailor teaching methods and course content to meet the learning goals of the course and the academic needs of the students. They are a requirement of the course and are key to continue to provide you with the highest quality of teaching. The evaluations are anonymous; the instructor and administration do not track who entered what responses. A program is used to check if the student completed the evaluations, but the evaluation is completely separate from the student's identity. Since 100% participation is our goal, students are sent periodic reminders over three weeks. Students do not receive reminders once they complete the evaluation. Students complete the evaluation online in CampusConnect.

Academic Integrity and Plagiarism

This course will be subject to the university's academic integrity policy. More information can be found at <http://academicintegrity.depaul.edu/>. If you have any questions be sure

to consult with your professor. Academic Policies All students are required to manage their class schedules each term in accordance with the deadlines for enrolling and withdrawing as indicated in the University Academic Calendar. Information on enrollment, withdrawal, grading and incompletes can be found at: <http://www.cdm.depaul.edu/Current%20Students/Pages/PoliciesandProcedures.aspx>

Students with Disabilities

Students who feel they may need an accommodation based on the impact of a disability should contact the instructor privately to discuss their specific needs. All discussions will remain confidential. To ensure that you receive the most appropriate accommodation based on your needs, contact the instructor as early as possible in the quarter (preferably within the first week of class), and make sure that you have contacted the Center for Students with Disabilities (CSD) at: csd@depaul.edu. Lewis Center 1420, 25 East Jackson Blvd. Phone number: (312)362-8002 Fax: (312)362-6544 TTY: (773)325.7296

Attitude

A professional and academic attitude is expected throughout this course. Measurable examples of non-academic or unprofessional attitude include but are not limited to: talking to others when the instructor is speaking, mocking another's opinion, cell phones ringing, emailing, texting or using the internet whether on a phone or computer. If any issues arise a student may be asked to leave the classroom. The professor will work with the Dean of Students Office to navigate such student issues.

Civil Discourse

DePaul University is a community that thrives on open discourse that challenges students, both intellectually and personally, to be Socially Responsible Leaders. It is the expectation that all dialogue in this course is civil and respectful of the dignity of each student. Any instances of disrespect or hostility can jeopardize a student's ability to be successful in the course. The professor will partner with the Dean of Students Office to assist in managing such issues.

Cell Phones/On Call

If you bring a cell phone to class, it must be off or set to a silent mode. Should you need to answer a call during class, students must leave the room in an undistruptive manner. Out of respect to fellow students and the professor, texting is not allowable in class. If you are required to be on call as part of your job, please advise me at the start of the course.

