CSE 687 Object Oriented Design

Instructor   Nadeem Ghani   email   nghani@syr.edu

Office   CST 4-232

Office Hours   Friday 10 AM - 12 PM

Course Description:

Object-oriented design may require the design of a class, or of a set of interacting objects, or the architecture of an entire system. And any of these activities might require a different approach in the specific context of the chosen software development life cycle (SDLC).

This class will cover some Java-specific patterns, some general Object-Oriented design patterns, and some even higher-level architectural patterns. Examples will be chosen from open-source software projects.

Students will be required to implement homework assignments and a term project in Java, and give a class presentation on their project.

Academic Integrity:

As a pre-eminent and inclusive student-focused research institution, Syracuse University considers academic integrity at the forefront of learning, serving as a core value and guiding pillar of education. Syracuse University's Academic Integrity Policy provides students with the necessary guidelines to complete academic work with integrity throughout their studies. Students are required to uphold both course-specific and university-wide academic integrity expectations such as crediting your sources, doing your own work, communicating honestly, and supporting academic integrity. The full Syracuse University Academic Integrity Policy can be found by visiting class.syr/edu, selecting, "Academic Integrity," and "Expectations and Policy."

Upholding Academic Integrity includes the protection of faculty's intellectual property. Students should not upload, distribute, or share instructors' course materials, including presentations, assignments, exams, or other evaluative materials without permission. Using websites that charge fees or require uploading of course material (e.g., Chegg, Course Hero) to obtain exam solutions or assignments completed by others, which are then presented as your own violates academic integrity expectations in this course and may be classified as a Level 3 violation. All academic integrity expectations that apply to in-person assignments, quizzes, and exams also apply online.

Students found in violation of the policy are subject to grade sanctions determined by the course instructor and non-grade sanctions determined by the School or College where the course is offered. Students may not drop or withdraw from courses in which they face a suspected violation. Any established violation in this course may result in course failure regardless of violation level.

Academic integrity will be taken very seriously! ***It is never OK to turn in code you copied from any source.*** All code submissions are expected to be completely your own work.

Artificial intelligence:

All generative-AI tools are prohibited in this course because their use inhibits achievement of the course learning objectives. This policy applies to all stages of project and writing processes including researching, brainstorming, outlining, organizing, and polishing. Do not use Generative-AI tools to create any content (i.e., images and video, audio, text, code, etc.). If you have any questions about a feature and whether it is considered Generative-AI, ask your instructor.

Credits: 3 Credits

Recommended Texts/Documents:

Absolute Java, Walter Savitch, 6th Edition, Pearson Education 2016. ISBN 978-1292109220.

Effective Java, Joshua Bloch, Third Edition, Addison Wesley 2017. ISBN 0134685997.

The Object-Oriented Thought Process, Fifth Edition, Matt Weisfeld, Addison Wesley 2019. ISBN 0135181968.

Head First Object-Oriented Analysis and Design, McLauglin, Pollice and West, O'Reilly 2007. ISBN 9780596008673.

Head First Design Patterns, Freeman and Robson, O'Reilly 2021. ISBN 9781492078005.

Design Patterns: Elements of Reusable Object-Oriented Software, Gamma et. al., Addison Wesley, 2001. ISBN 0201633612.

The Unified Modeling Language User Guide, Booch, Rumbaugh and Jacobson, Second Edition, Addison Wesley 2005. ISBN 0321267974.

Course Requirements and Expectations:

All students should be able to run java (version 18x), and unit tests. Intellij Community Edition with JUnit5 would be best.

Grading:

Grades will be based on a combination of class participation (10%) homework (50%), the final exam (20%) and in-class quizzes (20%).

Early in the semester, homework assignments will be small, easily done in a week. In the second half of the semester, students will be assigned to groups and asked to write a REST endpoint based on Spring Boot. This will be a multi-week assignment. Student groups will be required to present their work to the class and talk through their code.

Course Schedule: An approximate weekly schedule is shown below.

Week/Lecture	Topic
Aug 26 - 30	Java Basics
Sep 2 - 6	Java Basics
Sep 9 - 13	Object Oriented concepts
Sep 16 - 20	java.lang
Sep 23 - 27	java.util
Sep 30 - Oct 4	java.io
Oct 7 - 11	Design Patterns
Oct 14 - 18	Design Patterns (contd)
Oct 21 - 25	Design Principles
Oct 28 - Nov 1	Webapp presentations
Nov 4 - 8	Architecture Patterns
Nov 11 - 15	Webapp presentations
Nov 18 - 22	Miscellaneous Topics
Nov 25 - 29	***Thanksgiving Break***
Dec 2 - 6	***Final Exam Preparation***
Dec 10	***Final Exam***

SYRACUSE UNIVERSITY STUDENT POLICIES & SERVICES

<u>Student Mental Health</u>

Mental health and overall well-being are significant predictors of academic success. As such it is essential that during your college experience you develop the skills and resources effectively to navigate stress, anxiety, depression, and other mental health concerns. Please familiarize yourself with the range of resources the Barnes Center provides (https://ese.syr.edu/bewell/) and seek out support for mental health concerns as needed. Counseling services are available 24/7, 365 days, at 315-443-8000, and I encourage you to explore the resources available through the Wellness Leadership Institute, https://ese.syr.edu/bewell/wellness-leadership-institute/

University Attendance Policy

Attendance in classes is expected in all courses at Syracuse University. Students are expected to arrive on campus in time to attend the first meeting of all classes for which they are registered. Students who do not attend classes starting with the first scheduled meeting may be academically withdrawn as not making progress toward degree by failure to attend. Instructors set course-specific policies for absences from scheduled class meetings in their syllabi.

It is a federal requirement that students who do not attend or cease to attend a class to be reported at the time of determination by the faculty. Faculty should use "ESPR" and "MSPR" in Orange Success to alert the Office of the Registrar and the Office of Financial Aid. A grade of NA is posted to any student for whom the Never Attended flag is raised in Orange SUccess. More information regarding Orange SUccess can be found here, at http://orangesuccess.syr.edu/getting-started-2/.

Students should also review the University's religious observance policy and make the required arrangements at the beginning of each semester.

Syracuse University Policies: Syracuse University has a variety of other policies designed to guarantee that students live and study in a community respectful of their needs and those of fellow students. Some of the most important of these concern:

Diversity and Disability (ensuring that students are aware of their rights and responsibilities in a diverse, inclusive, accessible, bias-free campus community) can be found here, at: https://www.syracuse.edu/life/accessibilitydiversity/.

Religious Observances Notification and Policy (steps to follow to request accommodations for the observance of religious holidays) can be found here, at: http://supolicies.syr.edu/studs/religious_observance.htm

Orange SUccess (tools to access a variety of SU resources, including ways to communicate with advisors and faculty members) can be found here, at: http://orangesuccess.syr.edu/getting-started-2/

Disability-Related Accommodations: Syracuse University values diversity and inclusion; we are committed to a climate of mutual respect and full participation. There may be aspects of the instruction or design of this course that result in barriers to your inclusion and full participation in this course. I invite any student to meet with me to discuss strategies and/or accommodations (academic adjustments) that may be essential to your success and to collaborate with the Center for Disability Resources (CDR) in this process.

If you would like to discuss disability-accommodations or register with CDR, please visit Center for Disability Resources. Please call (315) 443-4498 or email disabilityresources@syr.edu for more detailed information.

CDR is responsible for coordinating disability-related academic accommodations and will work with the student to develop an access plan. Since academic accommodations may require early planning and generally are not provided retroactively, please contact CDR as soon as possible to begin this process. https://disabilityresources.syr.edu/