CS2340 Syllabus

Course Information

Course Prefix and Number: CS2340 A/GR

Course Name: Objects and Design

Instructor: Roy, Nimisha

Course Description

This course focuses on object-oriented design methods and processes for building large-scale software systems. Students apply prior knowledge of an object-oriented programming language to complex, real-world problems using agile development practices. Topics include architectural modeling, UML-based design documentation, design principles and patterns, and techniques that support collaborative, iterative development. The course emphasizes design thinking and teamwork through a substantial, team-based software project.

Course Learning Outcomes

By the end of this course, students will be able to:

- **Apply object-oriented design principles** (e.g., GRASP, SOLID) to analyze and structure software systems.
- **Select and implement appropriate design patterns** (e.g., Singleton, Factory, Observer, Strategy) to improve modularity, flexibility, and maintainability.
- **Design and build a substantial team-based software system** using Agile methodologies and industry-standard tools.
- **Collaborate effectively in Agile teams**, using version control and development tools to support iterative development.
- **Evaluate, test, and refactor code** using established best practices and quality feedback tools.

Required Course Materials

There is **no required textbook** for this course. However, lecture material is primarily based on two texts that we encourage students to read. Both books are available at no cost through the Georgia Tech Library via O'Reilly Learning.

To help you succeed in this course, we strongly recommend the following free online textbooks:

- **Applying UML and Patterns: An Introduction to Object-Oriented Analysis and Design and Iterative Development**
  Craig Larman (2005)
  https://www.oreilly.com/library/view/applying-uml-and/0131489062
- **Head First Design Patterns**
  Eric Freeman et al. (2004)
  https://www.oreilly.com/library/view/head-first-design/0596007124

Grading Policy:

This course uses a fixed grading scale. Letter grades are assigned according to the following convention:

- A = [90, 100) points (or more if bonus points are awarded)
- B = [80, 90) points
- C = [70, 80) points
- D = [60, 70) points
- F = [0, 60) points

Point values (fractional or otherwise) are NOT rounded to the next grade level. For example, 89.99 will be reported as "B." 90.00 (or higher) will be reported as "A." The instructor may consider some exceptions.

Late penalties are assessed using the following schedule: Canvas actually accepts late assignments and stamps them with the time of submission. The penalties below apply for all late submissions:

- Up to 1 day late: points are limited to 85% of the assignment total
- Up to 2 days late: points are limited to 70% of the assignment total
- More than 2 days late: 0 points

Late submissions are not accepted for weekly in-class assignments.

Weights

Scores are calculated using the following assignment category percentages:

Project Setup	8%
Project Implementation	32%
Midterm Exam	15%
Final Exam	15%
AI Readiness Module Completion	7%
Survey Submissions	3%
Lecture based participation quizzes	2%
Peer Reviews (CATME evaluations)	8%
Weekly Quiz & Activities	10%

Extra Credit Weights

In class Quizizz Games	max of 2%
Project Opportunities (Extra Features and Project Quality (SonarQube))	max of 5.1%
CIOS participation	max of 1%

Course Policies

Attendance and Class Participation

Attendance is required for lectures. Participation grades are based on in-class quizzes and activities. Additionally, **extra credit quizzes on Quizizz will also occur during lecture time**. You are fully responsible for all course content and administrative announcements made during class, including updates to the syllabus, assignments, and exam schedules. Missing class may negatively impact your understanding of the material and your ability to

participate meaningfully. Absences must be documented and approved through the Dean of Students (https://studentlife.gatech.edu/about/dean-students). This is the process to follow for documenting excused absences:

- Students should post about their absence and attach their excuse letter on Ed discussion as a private post and tag the correct category. You may notify us of your absence via Ed in advance while you wait for the letter and attach it to the post later.
- A member of the instruction team will respond to the post.
- If there is an individual participation activity on the excused days, the student will be excused from it.
- If there is an individual assignment due in the excused days, then students can get a 2-day extension or more (decided by the instructor on a case-by-case basis)
- Extra credit quiz will not be excused/allowed retake due to excused absences.
- If **more than half the members** of a group have excused absences, they can get an extension on their group submission (decided by the instructor on a case-by-case basis)
- If there is an individual exam scheduled on the excused days, the student can take a makeup exam.

Academic Integrity

Georgia Tech aims to cultivate a community based on trust, academic integrity, and honor. Students are expected to act according to the highest ethical standards. Review Georgia Tech's Honor Code and the student Code of Conduct.

Any student suspected of cheating or plagiarism on a quiz, exam, or assignment will be reported to the Office of Student Integrity, who will investigate the incident and identify the appropriate penalty for violations.

CATME Peer Evaluations & Team Policies

CATME peer evaluations contribute to your individual grade; students are expected to contribute equitably to their team project.

Team Accountability & Conflict Resolution

Teams are expected to collaborate professionally and address issues early.

- Concerns about team contribution should be raised during mandatory mentor check-ins or anytime during the sprint.
- If issues persist, teams may request a group change before the end of Sprint 2
- Requests must include documented evidence (e.g., CATME results, reflections, Git activity)

- Final decisions on grade adjustments or team changes are made by the instructor

Artificial Intelligence Policy

We recognize that generative AI tools (e.g., ChatGPT, Copilot) can support learning when used responsibly. In this course, you may use AI tools to brainstorm, explore ideas, or clarify concepts—similar to how you might collaborate with peers. However, All Submitted Work Must Reflect Your Own Understanding and Original Expression. You are responsible for ensuring that all submitted work is your own. Submitting content generated by AI tools will be treated as academic misconduct. If you're unsure whether your use of AI is appropriate, please ask.

Guidelines for Ethical AI Use:

- Use AI for Learning, Not for Writing Your Submission - Do not copy and paste AI-generated text into your assignment. You may consult AI tools to help you understand a topic or generate ideas. Instead, reflect on what you've learned and write your response in your own words.
- Separate Your Writing from AI Interactions - Do NOT work on your assignment and use an AI tool simultaneously. Treat your AI interaction as a preparatory step—like reading a source or discussing with a peer. After using AI, close the tool and write your assignment independently reflecting your revised knowledge.
- Avoid AI Tools That Auto-Generate Code and Content in Your Workspace
- Do not use AI features embedded in writing/coding platforms that insert content directly into your document/IDE (e.g. GitHub Copilot, ChatGPT, Tabnine Cursor, Replit AI, Sourcery, Jedi). This is equivalent to allowing someone else to write part of your assignment.

These guidelines are designed to help you stay within academic integrity boundaries. Deviating from them does not automatically mean misconduct, but it increases the risk.

Exam Policy

Exams are closed book, closed notes unless announced otherwise via a Canvas announcement. You are NOT permitted to contact any other person - either directly or indirectly via websites, group chats, etc. - during the exams. If you have been approved by ODS for extra time during exams, you MUST schedule exams to be taken at the testing center in advance. The starting time of the scheduled exams must match the starting time of the regular exams for your section. Be aware that the testing times must be scheduled 3+ business days in advance regardless of the capacity of the testing center.

Make-up Exam Policy

There are NO make-up exams without a verified excused absence from the Dean of Students Office. Please notify the instructor as soon as possible via a private Ed Discussion post if you are going to miss an exam. Then, submit your documentation to the Dean of Students Office. You will be allowed to take the makeup if the instructor receives the DoS letter before the makeup exam

date. Make-up exam requests will only be considered if they are submitted through the official channels and in accordance with the procedure detailed in http://www.catalog.gatech.edu/rules/4 .

Accommodations for Students with Disabilities

If you are a student with learning needs that require special accommodation, as soon as possible to make an appointment to discuss your special needs and to obtain an accommodations letter. I will respond to you via email to discuss your accommodation.

Student-Faculty Expectations Agreement

At Georgia Tech, we believe that it is important to strive for an atmosphere of mutual respect, acknowledgement, and responsibility between faculty members and the student body. This summarizes my expectations for you and what you can expect from me. In the end, simple respect for knowledge, hard work, and cordial interactions will help build the environment we seek. Therefore, I encourage you to remain committed to the ideals of Georgia Tech while in this class. Expectations of Advisors and Advisees