PURPOSE OF THIS COURSE

This course focuses on software system design methodologies, emphasizing the use of object-oriented modeling of application domains and software systems.

Also a strong emphasis on the roles of written and oral communication in software development (a.k.a. software engineering, the software development lifecycle, etc.).

Project management and software testing.

Individual and team projects include specification, software architecture, user interfaces, and documentation of all phases of a project.

Prerequisite: CSCI 2300 Introduction to Algorithms.
LEARNING OUTCOMES

At the conclusion of this course, you will be able to:

- Envision, design, develop, and deliver a full software product with a team that meets user-defined requirements
- Describe and use object-oriented design patterns in the design and development of software
- Design and iteratively develop software via a use case-driven approach (i.e., with the focus on what the user wants and needs)
- Effectively convey technical information in both individual and team presentations
- Read and draw UML diagrams

COMMUNICATION-INTENSIVE

For undergraduate students, this course serves as a CSCI in-major communication intensive (CI) course. Therefore, expect a lot of writing (not much code!), a lot of communication with your classmates, and multiple presentations.

Given that this course is online, all presentations that you make will need to be pre-recorded:

- We will try to use WebEx for this...
- ...or feel free to make use of other presentation recording software if you’d like
- This online format should take some of the pressure off and allow you to hone your presentation skills!
COURSE TA AND MENTOR

Graduate TA:
- Qitong Wang

TA and mentor office hours will be posted in Submitty.
We will randomly and periodically visit you during your team meetings!
Please do not email Qitong or our mentors directly.
- Instead, please communicate using the Discussion Forum and the Grade Inquiry interface.
- Or, if more urgent or personal in nature, please email me directly.

Undergraduate mentors:
- Ruben McWilliams
- Chuqiao Gu
- Qicheng Ma
- Dennis Chau

RECOMMENDED TEXTBOOKS

- *Writing Effective Use Cases* by Cockburn, 2001
- *The Mythical Man-Month, Anniversary ed.* by Brooks, 1995
- *Design Patterns: Elements of Reusable Object-Oriented Software* by Gamma, Helm, Johnson, and Vlissides, 1995
COURSE LMS

All course materials will be available via Submitty:

- [https://submit.cs.rpi.edu/courses/f20/csci4440](https://submit.cs.rpi.edu/courses/f20/csci4440)
- Log in using your RCS ID (e.g., “goldsd3”)

The course schedule will be posted there (and will likely change)

We will use Submitty’s Discussion Forum

- Watch for course announcements (typically also auto-emailed)
- Post questions; also answer questions, have discussions

Check your RPI email at least once per day for announcements

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**It is your responsibility to stay up-to-date with announcements posted on the Discussion Forum**

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REQUIRED SOFTWARE

We will primarily study object-oriented analysis and design concepts in conjunction with how to document, refine, and (to a lesser extent) implement your design to meet user requirements

Our focus is therefore not on programming languages!

- C++ or Java (or even Python) should suffice here, each of which has compilers, interpreters, and IDEs available for free via the Web
- When the time comes to choose a programming language, go with what you know (since the actual coding is of little significance in this course)

We will use Submitty for all assignments and deliverables

Collaborative documentation and drawing tools will also be very helpful
CONTENT DELIVERY

Some lectures will be pre-recorded using WebEx and Mediasite, with URLs published in Submitty.

Our scheduled lecture blocks are:
- Section 01 – Mondays and Thursdays 4:45-6:35PM EDT
- Section 02 – Mondays and Thursdays 6:55-8:45PM EDT
- You will also use these timeblocks to meet with your project teams

All of these will be recorded and made available (within ~24 hours).

Attendance is required based on timezones, i.e., you must meet with your project teams (once established) at least twice per week (except for Thanksgiving week).

Additional meeting timeblocks:
- Mondays and Thursdays 8:00-9:50AM EDT
- Mondays and Thursdays 9:00-10:50PM EDT

Our first graded assignment will be to determine your availability/preferences.

USING WEBEX MEETINGS

We will use WebEx: https://rensselaer.webex.com/

- RPI-specific WebEx information can be found here: https://info.rpi.edu/multimedia-services/webex-meetings-webex-teams

Live lectures will be via WebEx with URLs to join published in our Discussion Forum.

- All live lectures will be recorded for later viewing
- During live lecture, please ask questions via Chat (audio and video will be turned off for everyone)

For all scheduled lab/office hours:
- Set up your WebEx meeting space: https://rensselaer.webex.com/meet/<your-RCS-username>
- We will use Submitty’s Office Hours Queue to run labs and office hours
- Be sure you add yourself to the correct queue
- Be sure to include your WebEx meeting space URL when you join a queue
GRADING CRITERIA

Grading breakdown is as follows:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical Presentations</td>
<td>12%</td>
</tr>
<tr>
<td>Midterm Exam</td>
<td>20%</td>
</tr>
<tr>
<td>Mini-assignments</td>
<td>8%</td>
</tr>
<tr>
<td>Peer Evaluation</td>
<td>10%</td>
</tr>
<tr>
<td>Team Deliverables (5)</td>
<td>40%</td>
</tr>
<tr>
<td>Team Presentations</td>
<td>10%</td>
</tr>
<tr>
<td>Individual Work (mostly)</td>
<td></td>
</tr>
<tr>
<td>Project Team Work</td>
<td></td>
</tr>
</tbody>
</table>

Late days in Submitty:
- For all assignments except for team presentations
- Late days are intended to cover minor illnesses, hardware malfunctions, WiFi issues, conflicts with other assignments, and other minor (or absurd) mishaps
- Each student will initially be given six late days for the semester
- No more than two late days may be used for any one assignment
- If used on a team assignment, each team member must use a late day
- To use a late day, simply submit the assignment as per usual via Submitty

It is your responsibility to stay up-to-date with assignments, especially group assignments

ABSENCES AND EXTENSIONS

Attendance is required at your project team meetings, which will be scheduled to occur at least twice per week

For prescheduled and unforeseen absences for which you would like to obtain an extension on a deadline, see [http://bit.ly/rpiabsence](http://bit.ly/rpiabsence)

Do not ask for an extension without first obtaining an excused absence via the above URL
- If possible, please suggest a new due date for the affected assignment(s)
- Extensions will not be given because you forgot or you had too many other assignments to do, etc.

For every meeting you attend, please silence or turn off cellphones and other non-classroom electronic devices to avoid any distractions
INDIVIDUAL ASSIGNMENTS

There will be one technical presentation (10%)
- You will be required to record a brief presentation (15 minutes at most) on an object-oriented design pattern, a specific software tool, or some other aspect of the software development process; a list of topics will be given.

You will also be required to watch and provide feedback for at least four of these technical presentations (2%).

There will be a mix of individual/group mini-assignments (8%).

There will be one comprehensive midterm exam in late October (20%)
- The exam primarily covers object-oriented software design, design patterns, documentation techniques (i.e., UML), use case elaborations, etc.
- There is no final exam in this course!

There will be a peer review due in mid-December (10%).

PROJECT TEAM ASSIGNMENTS

Project teams will be formed at the beginning of Week 3
- Each team will select from a list of projects to work on or pitch your own project.
- Team meetings will occur at least twice per week (schedules based on timezones).

For each team, there will be five team deliverables (40%) that will cover your project requirements, stakeholders, features, design, use cases, deployment diagrams, test plans, best practices, etc.

For each team, there will be one team presentation (10%)
- The presentation will be due by the end of Week 14 (Friday 12/4).
- All team members must participate in the presentation.
- Each student must then watch and critique three team presentations by 12/11.
GRADING POLICIES

You may appeal a grade by submitting a grade inquiry (via Submitty)

- Grade inquiries must be submitted within seven days of grades being announced
- Smaller assignments will not have grade inquiries enabled (but in rare cases, email me)

Course grades are determined by applying the following ranges:

- 93-100 A; 90-92 A-; 87-89 B+; 83-86 B; 80-82 B-; 77-79 C+; 73-76 C;
- 70-72 C-; 67-69 D+; 60-66 D; 0-59 F

- (a curve is not expected but might be applied after all grades are in)

DISABILITY SERVICES FOR STUDENTS

From http://studenthealth.rpi.edu/disabilityservices:

- “The Office of Disability Services for Students (DSS) assists Rensselaer students with disabilities in gaining equal access to academic programs, extracurricular activities, and physical facilities on campus. DSS is the designated office at Rensselaer that obtains and files disability-related documentation, assesses for eligibility of services, and determines reasonable accommodations in consultation with students.”

Contact: dss@rpi.edu or 518-276-8197 or Academy Hall 4226

Please take care of your accommodations by Friday 9/4

- (You must renew your accommodations each academic year)
ACADEMIC INTEGRITY

Rensselaer Handbook of Student Rights and Responsibilities:

- “Intellectual integrity and credibility are the foundation of all academic work. A violation of the Academic Integrity policy is, by definition, considered a flagrant offense to the educational process. It is taken seriously by students, faculty, and Rensselaer and will be addressed in an effective manner.”
- “If found responsible for committing academic dishonesty, a student may be subject to one or both types of penalties: an academic (grade) penalty administered by the professor and/or disciplinary action through the Rensselaer judicial process described in this handbook.”

https://info.rpi.edu/dean-students/student-rights-responsibilities-and-judicial-affairs

ACADEMIC INTEGRITY POLICY

Individual assignments in this course must be the sole work of each individual student; for your group work, submitted work must be the sole work of the team members.

If found in violation of the academic dishonesty policy:

- You will receive a grade of zero on the given assignment
- For a second offense, you will receive an F in the course
- Team offenses will follow the above policy for all team members
- Each incident will be reported to the Dean of Students or Graduate Dean, as applicable, as well as the Department Head
- Cheating may cause you to be ineligible to mentor for the department, participate in departmental organizations, etc.
QUESTIONS?

Welcome to Rensselaer's Student Information System