



- **Submitty:** All homeworks and lecture exercises will be posted, submitted, and graded here. Submitty is also the preferred discussion forum for all homework/exam questions and answers, and all announcements. You must check the discussion forum regularly. You are already added to Submitty: <https://submitty.cs.rpi.edu/courses/f23/csci4380>
- We will add a shared database server that I will configure and make available to the class later in the semester and we may add other tools as well.
- Please check the appropriate sources for the appropriate content: Submitty (assignment info and questions) first and Course Website (links and course notes) second.

You should download the relevant apps for your phone and other devices. If you can't get access to any of these online resources, please send me an email as soon as possible. Please do not hesitate to contact me if events occur that disrupt your access to the internet such as power outages.

## **Course Goals / Objectives**

### **Student Learning Outcomes**

1. apply principles of normalization to design a data model that leads to the development of high-performance data intensive applications
2. write correct and efficient code that implements application logic for high throughput data operations
3. apply understanding of the internals of database management systems to proper tuning of the data model, code and storage methods

### **Course Assessment Measures**

Assessment	Due Date	Learning Outcomes
Homework	Every ten days	1, 2, 3
Exam	2 exams in a semester, final exam during finals week	1, 2, 3
Lecture Exercises	Roughly every lecture	1, 2, 3

### **Grading Criteria**

Lecture Exercises (25%), Homeworks (35%), Midterms (12% each), Final Exam (16%).

To pass this course, you must get an average of 60 in your midterm and final exams regardless of your homework and exercise grades. This is a firm rule and will be determined by the weighted test average rounded to the nearest integer. Exceptions will not be made.

There will be regular exercises, mostly automatically graded. The expected frequency is once or twice a week. Three of the lowest exercise grades will be dropped. Missed exercises cannot be made up. The exercises will count for 25% of your final grade. There will be homeworks roughly every ten days. The homeworks will count for 35% of your total grade. Some homeworks will be programming projects.

I will use the following chart to convert your year-end average to a letter grade (without rounding). Note: I reserve the right to lower these cutoff points, but I will never raise them:

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

## ***Attendance Policy***

The class is in person. You are responsible for all the material covered and announcements made in class.

After each lecture, there will be some lecture exercises on Submittly. Some of these will be automatically graded. Each lecture exercise must be completed alone, but you are welcome to work on them with others in the class.

Missed lecture exercises cannot be made up even with a valid excuse. If you have an extended absence, talk to the professor. Each lecture exercise will be available for about two days, starting with the end of class.

## ***Digital Tools Policy***

The online tools in the Resources section above provide services designed to assist schools, teachers and other educational partners to improve student learning outcomes. In some circumstances, these online tools may receive personally identifiable information about students (“Student Data”) from the instructor in the course providing this service. For example, an instructor will provide a class roster, email addresses of all students in the class, as well as coursework data that may be linked to a particular student. All listed online resource companies used by the instructor consider Student Data to be strictly confidential and have physical, administrative and technical security protections in place to protect such data. They do not use personally identifiable Student Data for any purpose other than to provide the services to the instructor, and they do not share personally identifiable Student Data with any third party except as authorized or required by the instructor. The online tools above may collect, analyze, and share anonymized or aggregated data or data derived from Student Data for certain purposes, but only if the disclosure of such data could not reasonably identify a specific individual or specific School. Collection and use of Student Data provided by the instructor is governed by Terms of Service for each platform and by the provisions of the Family Educational Rights and Privacy Act (FERPA). Student Data is provided and controlled by the instructor. If you have questions about reviewing, modifying, or deleting your personal information, please contact the instructor.

## ***Inclusivity and Accessibility***

Rensselaer Polytechnic Institute strives to make all learning experiences as accessible and inclusive as possible. In this course, we will strive to provide an environment that is equitable and conducive for learning for all students. While all lectures will be in person, some office hours may be online. Please contact me as soon as possible if you may need:

- 1) accommodations for exams with proper documentation,
- 2) anticipate or experience academic barriers based on a disability, or
- 3) experience any other difficulties as well any challenges related to your health and safety.

In such cases, please do not hesitate to get in touch to discuss ways we can put you in the best possible position to succeed. To receive any academic accommodation from The Office of Disability Services for Students, you must be appropriately registered with them (dss@rpi.edu; 518-276-8197, 4226 Academy Hall). After receiving an accommodation, discuss your situation with me or the appropriate office as soon as possible so that the accommodation can be put in place in a timely fashion.

## **Other Course Policies**

You are responsible for all the information posted in this syllabus including the course policies as well as any announcements made in class or posted on Submittity. You must use these online platforms for any course related questions.

You are expected to communicate to the instructor any issue regarding your performance in the class ahead of time. This includes absence from exams, late homeworks, inability to perform an assigned task, problems with your group members, the need for extra time on exams, etc. You should be prepared to provide sufficient proof of any circumstances on which you are making a special request as outlined in the Rensselaer Handbook of Student Rights and Responsibilities.

As part of the course material, you are expected to learn how to use several software products and frameworks. You will be given sufficient advance notice of such expectations and links to the appropriate study material. You are responsible for learning the software needed for the class.

**Homework Policy:** Homeworks in this class are a mix of required and optional. You will be allowed to skip some parts of a homework (to be clearly mentioned in each assignment) if you are short of time. Any skipped points in a homework will be added to the next exam's point value. Point value of each question will be clearly marked. If you submit a homework, you accept that the grade for all completed questions will count towards your final grade. You may not ask a homework grade to be excluded from your grade computation once you submit it.

**Late Homework Policy:** Late assignments create an extra burden on your TA and delay the discussion of the solutions in class. Late homeworks will not be accepted. Homework assignments must be submitted electronically by the given deadline.

**Grade Appeal Policy:** If you disagree with the grading on a homework, you should appeal to the TA first to maintain consistency in grading. If you are not satisfied with the outcome, you should then appeal to the instructor. For exam grading, appeal directly to the instructor. Appeals must be made within one week after the specific grade is returned.

A good learning environment requires flexibility, patience, and communication. Remember that your input and participation are crucial to the success of the course and your own success. Please be involved in the class and reach out when things are not working for you as soon as possible. I am here to listen and make any adjustments that are reasonable and can help others in the class. Any changes to the course and policies will be presented to the entire class through designated channels (in lecture, Submittity). One thing that will not change is the grading structure (relative weight of homeworks and exams).

## ***Academic Integrity***

Intellectual integrity and credibility are the foundation of all academic work. A violation of Academic Integrity policy is, by definition, considered a flagrant offense to the educational process and a violation of the trust between a student and a teacher. 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 the student handbook. Three relevant academic integrity violations to emphasize include:

**Collaboration:** Collaboration is defined as deliberately facilitating an act of academic dishonesty in any way or form; for example, allowing another student to observe an exam paper or allowing another student to "recycle" one's old homework or using one another's work in a paper or lab report without citing it as another's work.

**Copying:** Copying is defined as obtaining information pertaining to a graded exercise by deliberately observing the paper of another student; for example, noting which alternative a neighboring student has circled on a multiple-choice exam.

**Plagiarism:** Plagiarism is defined as representing the work or words of another as one's own through the omission of acknowledgment or reference. Examples include using sentences verbatim from a published source in a term paper without appropriate referencing, or presenting as one's own the detailed argument of a published source, or presenting as one's own electronically or digitally enhanced graphic representations from any form of media.

The Rensselaer Handbook of Student Rights and Responsibilities defines the full list of forms of Academic Dishonesty and you should make yourself familiar with these. In this class, all assignments that are turned in for a grade must represent the student's own work. In cases where help was received, or teamwork was allowed, a notation on the assignment should indicate your collaboration. If you have any questions concerning this policy before submitting an assignment, please ask for clarification.

Specific examples: Some assignments, like exams, have a clearly marked place on the front page that requires a signature confirming academic integrity. If you forget to sign the document before submitting it, a TA or instructor will contact you directly to ask you to sign before grading your assignment. We require that you take exams without speaking to other students via another communication channel. We expect you to use any permitted material just like you would in class. You cannot interact with Chegg.com or any other online/internet assignment sharing system for any graded assignment. Interaction with it results in an automatic failure for the entire course. A result of the violation using online resources to assist in graded assignments will result in a formal report. As a warning, there are ways that we can easily detect your use of these online resources that compromise academic integrity.

Submission of any assignment that is in violation of the policies described above will result in a penalty of an F in the class, and may be subject to further disciplinary action.

If you have any question concerning this policy before submitting an assignment, please ask for clarification.

## Course Calendar

Session	Date	Topic	Readings
Week 1	8/28/2023	Introduction to Database Systems and Relational Data Model (2 classes)	Chapters 1, 2.1, 2.2
Week 2-3	9/5/2023	Data Modeling - Normalization (3 classes)	Chapter 2, 3
Week 3-4	9/14/2023	Entity Relationship Models (2 classes)	Chapter 3, 4
Week 4-5	9/21/2023	Catch up (2 classes)	
<b>Week 5</b>	<b>9/28/2023</b>	<b>Exam #1</b>	
Week 6	10/2/2023	SQL Language (3 classes)	Chapter 6
Week 8	10/16/2023	Constraints and Triggers (1 class)	Chapter 7
Week 8	10/19/2023	Views and Indexes (1 class)	Chapter 8
Week 9	10/23/2023	SQL in a server environment (2 lectures)	Course notes, Chapter 9
Week 10	10/30/2023	Catch up (1 class)	
<b>Week 10</b>	<b>11/2/2023</b>	<b>Exam #2</b>	
Week 11	11/6/2023	Secondary Storage Management (1 class)	Chapter 13
Week 11-12	11/9/2023	Index Structures (2 classes)	Chapter 14
Week 13	11/16/2023	Query Execution (1 class)	Chapter 15
Week 13	11/20/2023	Query Optimization (1 class)	Chapter 16
Week 14-15	11/27/2023	Transaction Management (3 classes)	Chapters 17, 18, 19
Week 15	12/7/2023	Catch up (1 class)	
<b>Finals Week</b>		<b>Final Exam</b>	