

# CPSC-350-A: Databases and Web Programming

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**Class Meetings:** MW: 2:20pm - 3:50pm, Trexler 166

**Office Hours:** By appointment - <https://calendly.com/philippe-moore/office-hours>

## Course Description

In this course we will learn the theory behind relational database systems, and learn to design and create Web-based applications using a database at the back end. Topics include the architecture of a database system, the set-theoretic formalism that forms the theoretical framework for database systems, the query language SQL, normal forms of relations, and issues of data concurrency, security and integrity in the context of multi-user database systems. Through implementing a comprehensive Web-based application, we will learn about designing and creating interfaces for the user to meaningfully interact with the application, and about back-end, i.e., server-side, processing to support the application.

## Required Textbooks

1. An Introduction to Database Systems, 8th edition, by C. J. Date.

## Prerequisites

CPSC 170. Familiarity with Unix/Linux is assumed.

## Intended Learning Outcomes

At the end of this course successful students will be able to:

1. design normalized relational databases for a given data set;
2. use the Structured Query Language (SQL) to create relational databases and formulate queries to extract appropriate data from a given relational database;
3. use a variety of technologies to design user interfaces to be rendered on Web browsers; and
4. design and implement a back-end for a Web application.

## Mechanics

The course will meet in class for 3 hours during the week. There will be weekly homework, one midterm project, one exam and a final project (in place of the final exam). The midterm project will be due Saturday, October 9, 2022. The exam will be held Wednesday, November 14. The final project will be due Wednesday, December 7, 2022; we will use the final class for your final project presentation. Make-ups for the projects and exams will be available only in case of documented medical emergencies. This course expects you to spend at least 12 hours of work each week inside and outside of class.

## Homework

Homework will be assigned every week, and will be due by 10pm on the Saturday at the end of the week. Unless specified otherwise, all homework assignments must be submitted as typed. Late homework will not be accepted.

### Co-curricular Requirement

Besides the quizzes, homeworks and exams, there is a co-curricular requirement. The Mathematics, Computer Science and Physics department offers a series of discussions that appeal to a broad range of interests related to these fields of study. These co-curricular sessions will engage the community to think about ongoing research, novel applications and other issues that face these disciplines. Each student is required to attend at least three of these sessions, and turn in a short paper describing the contents of the session, and his/her critical reflections about the topic and content. These papers are due in class within a week of the session. A paper submitted beyond a week from the event being discussed in the paper will not be accepted. The MCSP Conversation Series website has the schedule of talks in the series.

### Grading

The weights for the various components will be:

Web Application Homeworks	10%
First Project : Web Application	20%
Database : Homeworks	10%
Database : Exam	20%
Final Project	36%
Co-curricular	4%

The final letter grade will be computed according to the following scale:

< 60	60-62	63-65	66-69	70-72	73-75	76-79	80-82	83-85	86-89	90-92	> 92
F	D-	D	D+	C-	C	C+	B-	B	B+	A-	A

### Class Attendance and Policies

Regular attendance in class is highly recommended. Regardless of attendance, students are responsible for all material covered or assigned in class. Cell phones should be kept in your backpacks or pockets (essentially, out of sight), and turned to silent mode throughout the duration of the class. Please do not remove your cell phones until you are outside the classroom/lab. Similarly, during office consultations or consultations in the lab (even when it is not during regular class time), your cell phones should be out of sight and in silent mode. If you use an electronic device such as a tablet or a laptop for note-taking or to read the textbook, the content that is open on the screen should be strictly restricted to documents and pages of relevance to the class. For example, you should not have any social media websites open in your browser window, even if it is in a tab that is not currently in focus. Also, please do not bring any food or drinks into the classroom.

## **Academic Integrity**

Students are expected to adhere to the Academic Integrity policies of Roanoke College. All work submitted for a grade is to be strictly the work of the student unless otherwise specified by the instructor. The policies as outlined in the Academic Integrity handbook will be enforced in the course. Graded programs are subject to the Roanoke College Academic Integrity policies. Copying a program or a portion of a program (even a single line) or reading another person's program to obtain ideas for solving a problem is plagiarism. Other examples of integrity violation include writing code for someone else, using code written by someone else, telling someone else how to solve a problem or having someone tell you how to solve a problem (and using his/her method). These cases apply to any work that is handed in for a grade under the instructor's assumption that the work is your own. Unless specified otherwise by the instructor, discussion among students should be limited to general discussion of concepts and language details, not specific aspects of a solution to the assigned problem.

## **Diversity, Mutual Respect, Inclusivity**

I will gladly honor your request to address you by an alternate name or gender pronoun. Please advise me of this preference early in the semester so that I may make appropriate changes to my records. I consider this classroom to be a place where you will be treated with respect, and I welcome individuals of all ages, backgrounds, beliefs, ethnicities, genders, gender identities, gender expressions, national origins, religious affiliations, sexual orientations, ability – and other visible and nonvisible differences. All members of this class are expected to contribute to a respectful, welcoming and inclusive environment for every other member of the class.

## **Covid-19 Policy**

If you have a temperature of 100.4° F or higher or other coronavirus symptoms, don't come to class. Call Health Services IMMEDIATELY. Do not come to class or go to any public area on campus. Do keep up with all readings, assignments, and deadlines. In order for your absence to be excused, you must give Health Services permission to notify me that you have consulted them about coronavirus symptoms. If Health Services informs you that you should isolate and not attend class for multiple days or weeks, inform me so that we can make a plan to keep you current in the course. All absences caused by consultation with Health Services about coronavirus symptoms or isolation ordered by Health Services will be excused, but you will need to do the work and graded assignments.

## **Masks**

The College is starting the term without a specific mask mandate. In this class, wearing masks will be optional.

If I need to make modifications to the syllabus during the semester I will make the changes only after discussing them with the class.