Rensselaer

Course Syllabus

Course Information

Database Systems	CSCI 4380	Section 01
RPI Fall 2018	4 cr	
Lecture	MR 2:00PM-3:50PM	Darrin 324

Course Website: http://www.cs.rpi.edu/~sibel/csci4380/fall2018/index.html

Prerequisites or Other Requirements:
This is a fourth year computer science course. As a result, it assumes a level of academic maturity appropriate for a student in their junior or senior year. It also requires good working knowledge of data structures and algorithms, and proficiency in C++ programming or Python (equivalent of CSCI-2300).

Instructor

Professor Sibel Adali   sibel@cs.rpi.edu
Office Location: LALLY 313   (518) 276-8047
Office Hours: ~~W 3:00PM-5:00PM~~ **T 4-6PM**

Teaching Assistant(s)

Name	Office	Office Hours	Email Address
Lilian Ngweta	TBA	TBA	ngwetl@rpi.edu
Lixin Chen	TBA	TBA	chenl19@rpi.edu

Course Description

This course provides an introduction to database systems, with a special emphasis on data modeling and programming. We will learn the fundamentals of database management systems and discuss how these fundamentals affect the best application design principles for databases. This course assumes no previous background in database systems. You will be expected to learn the use of computing systems on your own.

Course Text(s)

Database Systems: The Complete Book (2nd Edition), by Hector Garcia-Molina, Jeffrey D. Ullman, and Jennifer Widom. ISBN: 0131873253, Prentice Hall.

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

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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 Outcome #s
Homework	Every week	1, 2, 3
Exam	2 in-class exams in a semester, final exam during finals week	1, 2, 3
Quiz	Roughly every week	1, 2, 3

Grading Criteria

Quizzes (14%), Homeworks (36%), Midterms (15% each), Comprehensive Final Exam (20%).

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

There will be regular in class quizzes. The expected frequency is once every week. Two of the lowest quiz grades will be dropped. The quizzes will count for 14% of your final grade.

There will be homeworks roughly every week. The homeworks will count for 36% of your total grade. Some homeworks will be programming projects. Please see below for homework grading policy.

I will use the following chart to convert your year-end average to a letter grade.

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

I reserve the right to lower these cutoff points, but I will never raise them.

Attendance Policy

You are not required to attend the classes, but you are responsible for knowing the topics covered and any announcements made in class and attend the quizzes. Missed quizzes cannot be made up even with a valid excuse. If you have an extended absence, talk to the professor.

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 Piazza. You must use Piazza for all 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 a number of 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 optional. If you skip a homework, your next exam's point value will be incremented by the point value of the homework. Point value of each homework will be given at each assignment. If you submit a homework, you accept that the homework grade 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, then you should 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.

Taking Exams: All exams will be open book and open notes. You may not use any electronic tools during exams including cell phones, tablets and calculators, and you may not share your notes with anybody during exams. If you will be absent from exams or have other circumstances requiring exceptions, you must get an official excuse from the Student Experience office (se@rpi.edu).

Academic Integrity

Student-teacher relationships are built on trust. For example, students must trust that teachers have made appropriate decisions about the structure and content of the courses they teach, and teachers must trust that the assignments that students

turn in are their own. Acts that violate this trust undermine the educational process. The Rensselaer Handbook of Student Rights and Responsibilities defines various 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.

Cheating and Academic Dishonesty will not be tolerated. All your course work should provide an honest effort in solving the assigned problem by yourself (and by your group partners for group assignments). You are allowed to work with other students in designing algorithms, in interpreting error messages, in discussing strategies for finding bugs, but NOT in writing code or writing down solutions. Even if you discuss the problems with other students (or other teams), you should write down your own solution or program (without looking at any written solution) when turning in an assignment.

You may not share, copy, or discuss in detail code or solutions while writing it or afterwards. You may not show your code or solutions to other students as a means of helping them. You may not leave online, printed copies or drafts of your solutions in publicly accessible areas, such as labs, workstations, dorms, etc. You may not post complete or partial answers to homeworks in any public forum, especially on Piazza before the due date to make sure all students had a chance to work on the problems on their own. You may not give other students access to your solutions on paper, online, on the cloud, leaving copies of your solutions on public printers, keeping your computers unlocked or not password protected or giving your passwords to another student.

If you are found to have cheated on a homework, you will receive a zero on the given homework. Furthermore, you will no longer be allowed to submit future homeworks for credit. All remaining homework points will be transferred to exams. The penalty is the same whether you have given your own solutions or taken solutions from someone.

Note that you may not post homeworks in online forums or pay for others to solve your homeworks. This type of cheating will result in an immediate failing grade in this course.

Cheating in exams will result in an immediate failing grade in this course and will be immediately reported to the Dean of Students.

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

There may be changes to the policies, deadlines and list of topics described in the syllabus. You can expect me to give you reasonable notice of any changes. All changes will be announced in class.

Course Calendar

Session	Date	Topic	Readings	Assignments
Week 1	Aug. 30, 2018	Introduction to Database Systems and Relational Data Model (2 classes)	Chapters 1, 2.1, 2.2	
Week 1-2	Sep. 6, 2018	Data Modeling - Normalization (3 classes)	Chapter 2, 3	
Week 2-3	Sep. 17, 2018	Entity Relationship Models (2 classes)	Chapter 3, 4	
Week 3	Sep. 24, 2018	Catch up (1 class)		
Week 4	Sep. 27, 2018	Exam #1		
Week 5	Oct. 1, 2018	Algebraic Query Languages (1 class)	Chapter 5	
Week 5-6	Oct. 4, 2018	SQL Language (3 classes)	Chapter 6	
Week 7	Oct. 15, 2018	Constraints and Triggers (1 class)	Chapter 7	
Week 7	Oct. 18, 2018	Views and Indexes (1 class)	Chapter 8	
Week 8	Oct. 22, 2018	SQL in a server environment (2 lectures)	Course notes, Chapter 9	
Week 9	Oct. 29, 2018	Catch up (1 class)		
Week 9	Nov. 1, 2018	Exam #2		
Week 10	Nov. 5, 2018	Secondary Storage Management (1 class)	Chapter 13	
Week 10-11	Nov. 8, 2018	Index Structures (2 classes)	Chapter 14	
Week 11-12	Nov. 15, 2018	Query Execution (2 classes)	Chapter 15	
Week 12-13	Nov. 26, 2018	Query Compiler (2 classes)	Chapter 16	
Week 13-15	Dec. 3, 2018	Transaction Management (3 classes)	Chapters 17, 18, 19	
Finals Week		Final Exam		