

# CS 445: Introduction to Database Systems

Course Syllabus  
Fall 2011

## Introduction

An introduction to both the theory and application of Database Management Systems. Topics covered will include database design including normalization and optimization, the relational model, security, transaction management, and the query language SQL. Distributed and web architectures will be discussed. All topics in the course will be implemented concretely using a modern DBMS. Prerequisite: CS 300 with a minimum grade of C. 4 credits.

## Topics

The Relational Model	Concurrency	IM/InformationModels	IM/Indexing
ER Diagrams	Security	IM/PhysicalDatabaseDesign	IM/DataModeling
Relational Algebra	MySQL	IM/TransactionProcessing	IM/DatabaseSystems
Indexing	SQL	IM/RelationalDatabaseDesign	
Query Evaluation	Web enabled databases	IM/RelationalDatabases	
Transaction Management	LAMP	IM/QueryLanguages	

Many of the above topics were copied with permission from the Computing Curricula 2008 recommendations found at: <http://www.acm.org/education/curricula/ComputerScience2008.pdf>.

## Grade Breakdown

		92-100	A	90-92	A-
88-90	B+	82-88	B	80-82	B-
78-80	C+	72-78	C	70-72	C-
68-70	D+	60-68	D		
		0-60	F		

## Percent Breakdown

Midterm 1	15%
Midterm 2	15%
Final Exam	20%
Homework/Quizzes	15%
Programming Projects	35%
	First DB Assignment 20 pts
	Design Documents 25 pts
	MySQL Database 30 pts
	Web Interface 15 pts
	Presentations 10 pts

## Database Projects

This course will consist of two data base programming projects. The first will require the student build a small database outlined by the instructor. The student will also need to produce a set of SQL queries to process the data. The second assignment will require the student to design a database from the ground up. This includes producing documentation, not limited to ER diagrams, describing the database, implementation, and functionality presented to the user. This database will need a web interface. We will discuss how to do this with PHP and the Apache webserver in class. This assignment will be broken down into various milestones. Each milestone will be worth some percent of the final grade of the project. At the end of the semester each student will need to present his or her database project to the class. This should be a presentation of between 7 and 10 minutes describing the data and relationships in the database as well as a demonstration of the Web GUI.

All practical database work will need to be done using MySQL 5.5 Community Server. This is a free download. All projects are individual projects, do not allow any other student see your source code.

Details on how to submit each assignment will be specified later.

## Academic Dishonesty

The cheating policy is defined in Pacific Stuff & the Pacific Catalog as well as the Academic Policy that each of you signed upon entering Pacific University. Be sure you read or reread this policy carefully. All code written for our course is to be an original design and an original implementation. The Web, textbooks, and any other references are simply references for you. Copying source code from any source is prohibited.

Further, source code is not to exchange hands in any form or by any medium except when sending your solutions to the instructor. It is acceptable to share high level ideas during the design phase, share information dealing with OS issues, debugger issues, in general, development issues that do not involve code writing.

Specific solutions to homework problems should not be discussed with any other students. The solutions should be an individual effort unless otherwise specified on the assignment. As with coding, high level concepts can be discussed. However, do not discuss specific homework problems or solutions.

If you have any question as to whether or not what you are about to do constitutes cheating, ask the instructor.

## Course Policies

- Assignments are to be submitted, electronically and as a hard copy, by 1:00pm on the day in which they are due (unless otherwise specified). Late assignments will not be accepted. Start your assignments early. While no C or C++ code will be required in this class, SQL queries and PHP code can take much longer than you think to write. You may turn each assignment exactly once.
- Grade Complaints: If you have a complaint regarding a grade on an assignment, exam, or homework, write a one paragraph description of why you feel the grade is incorrect and deliver it to the instructor. The paragraph must be delivered to the instructor within one calendar week of when the graded material is returned to the student.
- Quizzes: A number of unannounced, open-notes quizzes will be given during the semester.
- No early or late exams/finals will be given.

- No incompletes will be given.
- All code in any form generated from this course becomes the intellectual property of Pacific University. You may not share this code with anyone without obtaining written permission from Pacific University.
- Neither computer failure, software failure, nor lack of computer access are accepted as excuses for late programs; therefore, start work on the programs as soon as they are assigned, don't put them off until the last minute. Further, corruption of programs due to bad disk media is also not accepted as an excuse for late programs; therefore, always keep a current backup of all programs on a separate disk. The Database machine is not backed up! You should be using some revision control software (such as Subversion) to manage your code (SQL scripts, php, html).
- The instructor reserves the right to raise or lower a student's grade based on class participation and attendance.
- I do not want to hear any electronic devices go off during lecture; therefore, make sure you silence these devices before lecture starts.
- Class starts promptly at 1:00pm. Your attendance is expected at each class meeting. It is in your own best interest to attend class, as your grade will almost certainly suffer indirectly if you choose not to attend. In addition, I reserve the right to consider attendance in instances of borderline grade assignments. Of course, excused absences (sickness, family emergencies, varsity athletic participation) will not be held against you. Scheduled absences should be communicated to me well in advance. If you must miss a class, be sure to check with me or another student to get what you missed. Exams will be given in class on the day scheduled and may not be made up. The material in the course is, by necessity, cumulative. Be warned that if you fall behind, you will not be able to catch up easily.
- If you have a documented disability covered under the ADA then services and accommodations are available from LSS (Learning Support Services). If you need reasonable accommodations to fully participate in course activities or meet course requirements, you must contact Edna K. Gehring, Director of LSS , at X2107. She will meet with you, review the documentation of their disabilities, and discuss the services Pacific offers.

## Resources

Textbook -- [Database Management Systems, 3rd Edition, Ramakrishnan & Gehrke](#)

Apachefriends <http://www.apachefriends.org/en/index.html>

PHP-MySQL Tutorial <http://www.php-mysql-tutorial.com/>

Web Database Application with PHP and MySQL, 2nd Edition  
**Print ISBN-13:** 978-0-596-00543-6

MySQL 5.5 Community Server <http://dev.mysql.com/downloads/mysql>

Visio Web GUI Template [http://www.guuui.com/issues/02\\_07.php](http://www.guuui.com/issues/02_07.php)

Database Machine gray.cs.pacificu.edu / 64.59.233.246 (only available on campus, use your zeus password)

## Instructor Details

**Professor**

Chadd Williams

**Email**

chadd@pacificu.edu

**Office**

Strain 202

**Phone**

(503) 352-3041

**Office Hours**MW 2:30-3:30pm  
Th 1-3 pm  
and by appointment

## Course Basics

**Course Title**

CS445 Introduction to Database Systems

**Meeting  
Times**

W M F 1:00pm - 2:05pm

**Location**

Marsh LL15

**Textbook**Database Management Systems, 3rd Edition,  
Ramakrishnan & Gehrke  
<http://pages.cs.wisc.edu/~dbbook/>**Website**<http://zeus.cs.pacificu.edu/chadd/cs445f11>**Official Clock**<http://time.gov/timezone.cgi?Pacific/d/-8/java>**Final Exam**

### Important Dates

*Labor Day Holiday:*

Monday, September 5, 2011 (No Classes)

*Midsemester Break:*

Friday, October 7, 2011 (No Classes for Arts &amp; Sciences)

*Thanksgiving Break:*

Wednesday, November 23, 2011 through Sunday, November 27, 2011

*Campus Calendar:*<http://pacificu.edu/calendar/>

### Planned Exam Dates

Midterm Sep 28

Midterm Nov 2

Final Friday, December 9  
8:30 AM to 11:00 AM