

Course Syllabus - Database Management INF385M

Professor: Christine "Tine" Walczyk

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Office Hours

By request. (Generally, I work off-campus during the day but I will meet with students at any time that's convenient with 24 hours notice. Most weeks, I will be in my shared office on the 5th floor on Tuesday afternoons before class.)

Course Meeting Times

Fall 2019: Tuesdays 6:00 to 9:00

Course Description

The primary goal of this class is to learn principles and practices of database management and database design. Over the course of the semester we will discuss the database relational database design, normalization, SQL queries, reports and other interfaces to database data, and documentation. Lectures will also cover writing ethical and privacy issues associated with database systems. In-class instruction and exercises will focus on the fundamentals for creating sophisticated, interactive, and secure database applications. For the first few weeks of class we will study PHP in order to better understand how data structures are stored and retrieved on computer systems, as well as providing a robust interface for accessing databases via the Web. We will then learn the fundamentals of database design using a variant of MySQL called MariaDB. MySQL and MariaDB are powerful relational database management systems used at companies such as Google and Facebook. We use PHP and MySQL as tools because they are commonly (and freely) available and provide substantially the same set of tools as commercial databases such as Microsoft SQL Server and Oracle. Although there will be a substantial programming (PHP) component to this course, previous programming experience is not required.

At the conclusion of this course students should:

- Understand the fundamentals of how data is stored in computer systems.
- Know the fundamentals of Structured Query Language (SQL) and how it can be used to store and retrieve data from a relational database.
- Be able to apply the principles used in class to build a web-based database application from the ground up.

Lecture Topics

(The order and amount of time spent on each topic may vary from semester to semester.)

- Discussion of syllabus and class structure
- Linux, working at the command line
- Coding in PHP - Variables, creating forms
- Coding in PHP - Math and control structures
- Coding in PHP - Arrays
- Coding in PHP - File Access
- Sorting data
- Databases - Normalization
- Databases - Tables and relationships

- Introduction to MySQL/MariaDB
- Databases - SELECT statements
- Putting PHP and SQL together
- Searching databases
- JOIN types
- Refining your searches
- Securing your database applications

Books

- In the Beginning was the Command Line Neal Stephenson 1999 This book is available as a paperback or can be downloaded from the course documents page
- PHP for the Web: Visual QuickStart Guide, 4th Edition Larry Ullman
- MySQL Crash Course Ben Forta

Grading

Programming assignments (48% of final grade)

A series of short programming and database exercises designed to complement the hands-on work done in class. These exercises must be completed each week before the start of class. They will represent not only a demonstration of the students' grasp of concepts covered in the course, they will also provide a convenient code base from which students can draw when designing their own projects. There will be 5 assignments worth 8 points each and 2 assignments worth 4 points each that will represent 48% of the final grade.

Group Tutorial (12% of final grade)

As an initial collaboration effort, each group of (3-5) students will develop and present an in-class tutorial on a database subject that will be assigned in class. Grades will be based on both the content of the tutorial and the presentation.

Final Project (40% of final grade)

The final project will also be done in groups of 3-5. For the final project, the groups will select or be presented with a real-world scenario for which a web application must be built. The project will incorporate database and programming concepts covered in class. Up to 20 points will be awarded based on the content and construction of the final project, 5 points will be awarded based on the in-class presentation, and 5 points will be based on group participants' member evaluations.

Grading Scale

- 96 or above (A: superior), 90-95 (A-: distinguished)
- 87-89 (B+: good), 84-86 (B: satisfactory), 80-83 (B-: barely satisfactory)
- unsatisfactory: 77-79 (C+), 74-76 (C), 70-73 (C-).

Note: Final grading does not happen just by calculations. I take into account many factors, and so your “Canvas points/%” are only a rough indication of the final grade. Ask when in doubt.

HOMEWORK

All assignments and project deliverable due dates are on the course schedule and in Canvas (under Assignments and Calendar). Even if the instructor doesn't announce each due date in class, it's your job to know when you should be working on one and when they are due. Please ask when in doubt.

Submitting written homework and assignments

You must prepare your assignments using a word processor and submit it by uploading to Canvas by the due date/time. Please always use appropriate three- or four-letter file extensions in submitted filename (e.g., .docx for Word files, .pdf for Adobe portable document format. Please avoid submitting zip files). Assignments usually may not be submitted via email to the professor.

Important: All documents that you are submitting should include on the front page of your submission your name, course number/name, instructor's name, semester and the date of submission. For group work, if applicable, please also always include on the front page all group member names, your project group number, and your project short name (or title). **Warning:** If you do not follow these requirements, your submission may be returned without a grade and without a possibility to re-submit it.

CLASS PARTICIPATION

Class participation includes active participation in lectures, presentations (Q&A) and in classroom discussions.

CLASS POLICIES

Due dates and times for handing in homework and project assignments

Unless otherwise indicated, all homework and project assignments must be turned in at the beginning of class on the due date. You should think of all due dates for assignments, especially project assignments, as firm. The tight schedule of deliverables throughout the whole semester makes it nearly impossible to slip or extend due dates. Any assignment that you do not hand in on time may be penalized in grading. If you are not able to complete an assignment by the due date, it would be best for you to hand in as much of it as you have done. You must prepare your assignments using a word processor and submit it by uploading to Canvas by the due date/time. Please do **not** submit links to Google Docs. Assignments usually may not be submitted via email to the professor.

Attendance

You will not be graded directly on attendance. You are adults in a graduate-level course and are expected to attend every class. Beyond the occasional need to be absent from class for a good reason, please consider that much of the learning for the course occurs in class. You cannot participate in this learning if you are not present.

If you have to miss class for an extended period due to a protracted illness or similar reason, we will treat your needs as a special case and I will do everything I can to help you survive.

Computer use in the classroom

You may use your laptops and other computing devices (e.g., tablets, smartphones) in the classroom. However, their use during class time is **restricted to class related activities**. Students who use their devices for non-class related activities will be excused from the class and will have points deducted for their final grade.

Plagiarism & Academic Honor Code

Plagiarism, as defined in the 1995 Random House Compact Unabridged Dictionary, is the "use or close imitation of the language and thoughts of another author and the representation of them as one's own original work." (as cited in Plagiarism (2017). Wikipedia, <https://en.wikipedia.org/wiki/Plagiarism>). If you use words or ideas that are not your own you must cite your sources. Otherwise you will be guilty of plagiarism. Here's a resource designed to help you avoid plagiarism: www.lib.utexas.edu/plagiarism

You are encouraged to discuss assignments with classmates, but anything submitted must reflect your own, original work. If in doubt, ask the instructor. Plagiarism (as described above) and similar conduct represents a serious violation of UT's Honor Code and standards of conduct:

- http://deanofstudents.utexas.edu/sjs/scholdis_plagiarism.php
- <http://deanofstudents.utexas.edu/sjs/conduct.php>
- http://bit.ly/UT_plagiarism_Matt – resource from Dr. Matt Lease (4pgs)

It is YOUR RESPONSIBILITY as a student to avoid honor code violations. Neither ignorance nor accidents excuse violations. If in doubt, ask the instructor and/or err on the side of caution by quoting borrowed text and citing sources of borrowed ideas and text.

Students who violate University rules on academic dishonesty are subject to severe disciplinary penalties, such as automatically failing the course and potentially being dismissed from the University. **PLEASE do not take the risk.** We are REQUIRED to automatically report any suspected case to central administration for investigation and disciplinary hearings. Honor code violations ultimately harm yourself as well as other students, and the integrity of the University, academic honesty is strictly enforced. For more information, see the Student Judicial Services site: <http://deanofstudents.utexas.edu/sjs>.

Notice about students with disabilities

The University of Texas at Austin provides appropriate accommodations for qualified students with disabilities. To determine if you qualify, please contact the Dean of Students at 512-471-6529 or UT Services for Students with Disabilities. If they certify your needs, we will work with you to make appropriate arrangements. UT SSD Website: <http://www.utexas.edu/diversity/ddce/ssd>

Coping with stress and personal hardships

The Counseling and Mental Health Center offers a variety of services for students, including both individual counselling and groups and classes, to provide support and assistance for anyone coping with difficult issues in their personal lives. As mentioned above, life brings unexpected surprises to all of us. If you are facing any personal difficulties in coping with challenges facing you, definitely consider the various services offered and do not be shy to take advantage of them if they might help. These services exist to be used.

Notice about missed work due to religious holy days

A student who misses an examination, work assignment, or other project due to the observance of a religious holy day will be given an opportunity to complete the work missed within a reasonable time after the absence, provided that he or she has properly notified the instructor. It is the policy of the University of Texas at Austin that the student must notify the instructor at least fourteen days prior to the classes scheduled on dates he or she will be absent to observe a religious holy day. For religious holy days that fall within the first two weeks of the semester, the notice should be given on the first day of the semester. The student will not be penalized for these excused absences, but the instructor may appropriately respond if the student fails to complete satisfactorily the missed assignment or examination within a reasonable time after the excused absence.

Electronic-mail Notification Policy

In this course e-mail will be used as a means of communication with students. You will be responsible for **checking your e-mail regularly** for class work and announcements. If you are an employee of the University, your e-mail address in Canvas is your employee address. I will make every effort to answer your email in a timely fashion. However, you should not necessarily always expect to get an immediate reply. In particular, don't expect to get answers to questions about a homework or project assignment within the last few hours before that assignment is due. Please put **INF385M** as part of the subject line of your email; that will help us identify your emails more quickly.

The University has an official e-mail student notification policy. It is the student's responsibility to keep the University informed as to changes in his or her e-mail address. Students are expected to check e-mail on a frequent and regular basis in order to stay current with University-related communications, recognizing that certain communications may be time-critical. Read the policy: <http://www.utexas.edu/its/policies/emailnotify.html>. You can find and change your official email address of record at https://utdirect.utexas.edu/apps/utd/all_my_addresses

Assignments Schedule

(Canvas holds the official dates. Please confirm with Canvas if you have any confusion.)

Date	Details	
Tue Sep 24, 2019	PHP Assignment #1 - Diploma Mill	due by 5:59pm
Tue Oct 1, 2019	PHP Assignment #2 - Multiplication Tables	due by 5:59pm
	PHP Assignment #3 - Four-function Calculator	due by 5:59pm
Tue Oct 8, 2019	PHP Assignment #4 - Dynamically Generated Form Elements	due by 5:59pm
Tue Oct 15, 2019	PHP Assignment #5 - Randomized Pop Quiz	due by 5:59pm
Tue Oct 22, 2019	MySQL Assignment #1a - Recipe Database Design	due by 5:59pm
Tue Oct 29, 2019	MySQL Assignment #1b - Recipe Database Design	due by 5:59pm
Tue Nov 5, 2019	My SQL Assignment #2 - Build a Report	due by 5:59pm
Tue Nov 12, 2019	SQL Tutorial - Group Presentation	due by 5:59pm
Tue Nov 19, 2019	PHP #6 - Election Day	due by 5:59pm
Tue Dec 3, 2019	Final Project Presentations	due by 5:59pm
MON Dec 9, 2019	Final Project Submission	due by 11:59pm