

Course Syllabus

Professor: Christine "Tine" Walczyk

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Office Hours: (As requested. 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 2017: 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.

Grading

Programming assignments (60% 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.

Lecture Order











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
- Final presentations

Books Needed for this Course:

- 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

Course Summary:

Date	Details	
Tue Sep 26, 2017	 PHP Assignment #1	due by 5:59pm
Tue Oct 3, 2017	 PHP Assignment #2  PHP Assignment #3	due by 5:59pm
Tue Oct 10, 2017	 PHP Assignment #4	due by 5:59pm
Tue Oct 17, 2017	 PHP Assignment #5	due by 5:59pm
Tue Oct 24, 2017	 PHP Assignment #6	due by 5:59pm
Tue Oct 31, 2017	 MySQL Assignment #1	due by 5:59pm
Tue Nov 14, 2015	 SQL Tutorials	due by 5:59pm
Tue Dec 5, 2017	 Final Project Presentations	IN CLASS
Mon Dec 11, 2017	 Final Project	due by 11:59pm