Acad 276: Dev 2
4 Units:
Fall 2017—Tuesday and Thursday 2 - 4:50p.m.
Location: VPD LL101
Website: http://iyawebdev.com/Acad276

Instructor: Patrick Dent
Office: ST0331
Contact Info: dent@usc.edu / 213-821-1400
Note: Email is the preferred method of contact. I will typically reply within 24 hours (Mon - Fr).

Grader: Akshat Barbhaya <abarbhay@usc.edu>

IT Help: Academy IT
Hours of Service: 8:30-5:00pm
Contact Info: iyhelp@usc.edu, 213-821-6917

Course Description
This course teaches the fundamentals of relational database management systems (RDBMS) and how to design and implement databases. Students will learn the Structured Query Language (SQL) for communicating with databases. They will learn and use the PHP scripting language to make SQL calls to databases and to flow those results into pages. Students will also use PHP to create data interfaces, as well as to create basic conditional routines and other constructs that allow for dynamic sites. They will perform basic analytics and will learn the fundamentals of alternative data structures, enterprise databases, and "big data" systems.

Learning Objectives
From e-commerce to news and information, modern web sites do not contain thousands of hand-coded pages. Sites are driven by web "templates" that flow in information from databases or other data sources. Student will learn the basics of creating data structures to house the core "data" of web sites and user server-side scripting to "flow" that information into web templates. They will also learn the basic techniques for tracking user behavior and traffic, and the fundamentals of performing analytics on that data.

Prerequisite: Acad275

Required Textbook: None
Grading Breakdown

<table>
<thead>
<tr>
<th>Category</th>
<th>Weight</th>
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<tbody>
<tr>
<td>Assignment</td>
<td>35%</td>
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<tr>
<td>Attendance and Labs</td>
<td>15%</td>
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<tr>
<td>Examination</td>
<td>15%</td>
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<tr>
<td>Major Project</td>
<td>35%</td>
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<tr>
<td><strong>TOTAL</strong></td>
<td>100%</td>
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Grading Scale (Example)
Course final grades will be determined using the following scale
A 93-100
A- 90-92
B+ 88-89
B 83-87
B- 80-82
C+ 78-79
C 73-77
C- 70-72
D+ 68-69
D 63-67
D- 60-62
F 59 and below

Major Project [DRAFT]
Students will work in groups to build a database-driven web site built in MySql and PHP. The site will feature a secured administrative back-end, track user behavior and traffic, and feature custom modules.

Project Timeline:
- **Week 10** Milestone 1: Proposal, DB v1, Logos, Frontpage designs
- **Week 12** Milestone 2: Frontpage build, Search and Result pages, Design / Style Guide
- **Week 13** Milestone 3: User Testing Results
- **Week 14** Milestone 4: Login, Admin, Majority of Site Pages
- **Week 16** Final Build: Complete, Dynamic Site, Summary and Write Up

Course Structure
Students are expected to:
- Participate in lecture discussions and critiques
- Complete weekly labs, assignments and projects
- Manage, participate in and complete group project builds

Students are responsible for completing assignments and projects by stated deadlines. Most assignments will be uploaded by students to their USC Web space and linked from an assignment page.

Policies
No make-up exams (except for documented medical or family emergencies) will be offered nor will there be any changes made to the Final Exam schedule, except as permitted by university rules.

Due dates and requirements for all Labs and Assignments will be posted on the course site. Students will “post” their work to their USC web space as defined on the course site.

It if the student’s responsibility to post work by the due date following the defined class procedures, even if you miss class. Work turned in late will lose 10% credit per day and late work is not accepted after two weeks past the due date. To receive credit for late work you MUST email the grader that you posted a lab or assignment after the due date or you will not receive credit.

An attendance sheet will be circulated each lecture. You must sign in for lecture to receive lecture attendance credit.
Academy Student Attendance Policy

The Academy maintains rigorous academic standards for its students and on-time attendance at all class meetings is expected. Each student will be allowed two excused absences over the course of the semester for which no explanation is required. Students are admonished to not waste excused absences on non-critical issues, and to use them carefully for illness or other issues that may arise unexpectedly. Except in the case of prolonged illness or other serious issue (see below), no additional absences will be excused. Each unexcused absence will result in the lowering of the final grade by 1/3 of a grade (e.g., an A will be lowered to A-, an A- will be lowered to B+, etc.).

Students remain responsible for any missed work from excused or unexcused absences. Immediately following an absence, students should contact the instructor to obtain missed assignments or lecture notes and to confirm new deadlines or due dates. Extensions or other accommodations are at the discretion of the instructor.

Automatically excused absences normally may not be used for quiz, exam or presentation days. Using an excused absence for a quiz, exam or presentation, such as in the case of sudden illness or other emergency, is at the discretion of the instructor.

In the case of prolonged illness, family emergencies, or other unforeseen serious issues, the student should contact the instructor to arrange for accommodation. Accommodation may also be made for essential professional or career-related events or opportunities. All accommodations remain at the discretion of the instructor, and appropriate documentation may be required.
# Dev 2: Server-side web development, databases and analytics

## Course Outline

| Week 1a | Aug 20 | Course introduction and overview.  
Web server and content workflow.  
*Lab:* Install mySql Workbench (due W1b) |
| --- | --- | --- |
| Week 1b | Aug 22 | Database fundamentals, designing databases for web content, major db platforms. MySQL, working with MySQL Workbench.  
*Assignment:* DB schema (due W2a) |
| Week 2a | Aug 27 | Introduction to Structured Query Language (SQL).  
Reading data with SELECT and WHERE. Views  
*Assignment:* SQL statements pt 1 (due W2b) |
| Week 2b | Aug 29 | SQL Review. Inserting, updating and deleting records, Reformatting data. Introduction to phpmyadmin.  
*Assignment:* RVS db schema. SQL statements pt 2 (due W3a). |
| Week 3a | Sept 04 | Introduction to PHP and PHPStorm.  
Introduction to PHP Scripting Language and basic tags  
*Lab:* Assignment Web page (due W3b)  
*Assignment:* Class schedule database (due W3b) |
| Week 3b | Sept 06 | PHP and MySQL (mysqli). Populating pages with content from db.  
Looping through queries.  
*Assignment:* Search and Result pages (due 4a) |
| Week 4a | Sept 11 | Php conditional statements. Populating select menus.  
*Assignment:* Search, Result pages v2 (due 4b) |
| Week 4b | Sept 13 | Review php “if”, dynamic menus. Creating web “insert” forms.  
*Assignment:* Add, Insert pages (due 5a) |
| Week 5a | Sept 18 | Drill-down workflow 1: Search, Results, Details  
*Lab:* Search, result, details pages (due 5b)  
*Assignment:* Project proposal, db sketch and pitch videos (due 6a) |
| Week 5b | Sept 20 | Drill-down workflow 2: Results, Edit, Delete  
*Assignment:* Db backup/export. Edit/update pages. (due 6a) |
| Week 6a | Sept 25 | Database exercise. Review drill-down, form objects.  
Exam preparation. |
| Week 6b | Sept 27 | Group project discussions. Aggregate SQL. |
Week 7a  Oct 02  **PHP and SQL Examination**

Week 7b  Oct 04  **Special Topics (TBA)**

Week 8a  Oct 09  Creating emails with php.
**Lab:** Create “Email search results” functionality (due 8b).

Week 8b  Oct 11  Images in databases. File uploads with php.
**Assignment:** Add images to class schedule (due 9a)

Week 9a  Oct 16  Review php includes. Session and client variables. Login routines.
**Lab:** Php log-in, security sandbox (due 9a).

Week 9b  Oct 18  Sub-queries. Paginated results.

Week 10a  Oct 23  PHP Frameworks

Week 10b  Oct 25  Deconstructing project databases. Setting foreign key constraints.
Enforcing key constraints, many-to-many joins.

Week 11a  Oct 30  Introduction to Analytics

Week 11b  Nov 01  **Special Topics (TBA)**

Week 12a  Nov 06  Group project design critiques

Week 12b  Nov 08  **Special Topics (TBA)**

Week 13a  Nov 13  **Special Topics (TBA)**

Week 13b  Nov 15  **Special Topics (TBA)**

Week 14a  Nov 20  Group project “comm” critiques

    Nov 22  **University Holiday**

Week 15a  Nov 27  DB transactions, locking

Week 15b  Nov 29  Beyond Dev2: server-side technologies, hosting, CMS
**Special Topics (TBA)**
Next-generation development

    Nov 30  Group Website Final Build due
Possible Special Topics:

Data Visualization (GL)

Caching

Additional intermediate PHP Functions

Laravel PHP Framework

Advanced Joins

Query Performance Optimization

Business Intelligence Systems Part 1: Big data, data warehousing,

Business Intelligence Systems Part 2: business reporting,
data mining

Analytics Special Topics

Quality Assurance processes and phases

The Web development industry

Industry Event or Tour
Statement on Academic Conduct and Support Systems

Academic Conduct:
Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Part B, Section 11, “Behavior Violating University Standards” policy.usc.edu/scampus-part-b. Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on scientific misconduct, http://policy.usc.edu/scientific-misconduct.

Support Systems:
Student Counseling Services (SCS) – (213) 740-7711 – 24/7 on call
Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention. engemannshc.usc.edu/counseling

National Suicide Prevention Lifeline – 1 (800) 273-8255
Provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week. www.suicidepreventionlifeline.org

Relationship and Sexual Violence Prevention Services (RSVP) – (213) 740-4900 – 24/7 on call
Free and confidential therapy services, workshops, and training for situations related to gender-based harm. engemannshc.usc.edu/rsvp

Sexual Assault Resource Center
For more information about how to get help or help a survivor, rights, reporting options, and additional resources, visit the website: sarc.usc.edu

Office of Equity and Diversity (OED)/Title IX Compliance – (213) 740-5086
Works with faculty, staff, visitors, applicants, and students around issues of protected class. equity.usc.edu

Bias Assessment Response and Support
Incidents of bias, hate crimes and microaggressions need to be reported allowing for appropriate investigation and response. studentaffairs.usc.edu/bias-assessment-response-support

The Office of Disability Services and Programs
Provides certification for students with disabilities and helps arrange relevant accommodations. dsp.usc.edu

Student Support and Advocacy – (213) 821-4710
Assists students and families in resolving complex issues adversely affecting their success as a student EX: personal, financial, and academic. studentaffairs.usc.edu/ssa

Diversity at USC
Information on events, programs and training, the Diversity Task Force (including representatives for each school), chronology, participation, and various resources for students. diversity.usc.edu

USC Emergency Information
Provides safety and other updates, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible. emergency.usc.edu

USC Department of Public Safety – UPC: (213) 740-4321 – HSC: (323) 442-1000 – 24-hour emergency or to report a crime.
Provides overall safety to USC community. dps.usc.edu