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.

Website:  http://iyawebdev.com/acad276

Instructor:  Patrick Dent
Office:  IYH201M
Office Hours  TBA
And by appointment

Contact Info:  dent@usc.edu / 213-821-1400
Note: Email is the preferred method of contact. I will typically respond with 24 hours (M - F).

Grader:  TBA

IT Help:  https://uscedu.sharepoint.com/sites/IYASudent/SitePages/IT-Resources.aspx
Hours of Service:  8:30am - 6:30pm
Contact Info:  iya.helpdesk@usc.edu, 213-821-6917

USC Technology Support Links
Zoom information for students
Blackboard help for students
Software available to USC Campus
Prerequisite: Acad275

Required Textbook: None

USC Technology Rental Program
The university realizes that attending classes online and completing coursework remotely requires access to technology that not all students possess. If you need resources to successfully participate in your classes, such as a laptop or internet hotspot, you may be eligible for the university’s equipment rental program. To apply, please submit an USC Technology Rental Program Application.

HOW TO PURCHASE SOFTWARE AT THE DISCOUNTED ACADEMY RATE

For classes that require them, the following software are available for purchase online through the USC Iovine and Young software catalog at the Academy discounted rate:

<table>
<thead>
<tr>
<th>Software</th>
<th>IYA Short-Term License at USC Bookstore</th>
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</thead>
<tbody>
<tr>
<td>Adobe Creative Cloud</td>
<td>$70 2019–2020 annual license</td>
</tr>
</tbody>
</table>

To purchase:
- Visit: https://commerce.cashnet.com/IOVINE
- Select the software license(s) you would like to purchase by clicking “View Details” or the software title, and make your purchase
- You will receive an order confirmation receipt at the email address you provided
- You will be notified by email when the software license has been activated

If you have any questions about this process, please do not hesitate to contact Academy IT Support at iyahelp@usc.edu.

Grading Breakdown

<table>
<thead>
<tr>
<th>Assignment</th>
<th>35%</th>
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</thead>
<tbody>
<tr>
<td>Attendance and Labs</td>
<td>15%</td>
</tr>
<tr>
<td>Examination</td>
<td>15%</td>
</tr>
<tr>
<td>Major Project</td>
<td>35%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>100%</strong></td>
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</tbody>
</table>
Grading Scale
The following shows the grading scale to be used to determine the letter grade.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Score Range</th>
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<tbody>
<tr>
<td>A</td>
<td>100 - 94</td>
</tr>
<tr>
<td>A-</td>
<td>94 - 90</td>
</tr>
<tr>
<td>B+</td>
<td>90 - 87</td>
</tr>
<tr>
<td>B</td>
<td>86 - 83</td>
</tr>
<tr>
<td>B-</td>
<td>83 - 80</td>
</tr>
<tr>
<td>C+</td>
<td>80 - 77</td>
</tr>
<tr>
<td>C</td>
<td>77 - 73</td>
</tr>
<tr>
<td>C-</td>
<td>73 - 70</td>
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<tr>
<td>D+</td>
<td>70 - 67</td>
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<tr>
<td>D</td>
<td>67 - 64</td>
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<tr>
<td>F</td>
<td>64 or below</td>
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</table>

**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 09** Milestone 1: User Research, 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 lab assignments and projects
- Manage and complete individual class projects

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).

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 is 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 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 $\frac{1}{3}$ of a grade (e.g., an A will be lowered to A-, and A- will be lowered to a B+, etc.). In addition, being tardy to class will count as one-third of an absence. Three tardies will equal a full course absence.

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 many 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.

Fall 2022 addendum:

- Unless students provide an accommodation letter from USC’s Office of Student Accessibility Services (OSAS) or a letter from IYA Student Services detailing visa or travel restrictions, attendance and active participation is expected in the classroom. Any student with such accommodations should submit their accommodation document to the instructor as soon as possible to discuss appropriate accommodations. Either classroom recordings or live remote access to the class via Zoom will be provided.
- Students who are experiencing illness should not attend class in person. Please inform the instructor in advance of any class sessions that you can’t attend for medical reasons, and accommodations will be arranged to view recorded lectures and submit alternatives to any missed class participation. Students will not be penalized for not attending class in person under these circumstances.
- In the event that you find yourself experiencing COVID-19 related symptoms, in keeping with university recommendations, you should Stay home! This is the best way to prevent spreading COVID-19 as supported by scientific evidence; Please do not come to an in-person class if you are feeling ill, particularly if you are experiencing symptoms of COVID-19.
### Course Schedule: A Weekly Breakdown

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topic</th>
<th>Assignments</th>
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<tbody>
<tr>
<td><strong>Week 1a</strong> Aug 23</td>
<td>Course introduction and overview. Web server and content workflow. <strong>Lab:</strong> Test cPanel, create database (due 1b)</td>
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<td><strong>Week 1b</strong> Aug 25</td>
<td>Database fundamentals, designing databases for web content, major db platforms. MySQL, working with phpmyadmin <strong>Assignment:</strong> DB schema (due W2a)</td>
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<tr>
<td><strong>Week 2a</strong> Aug 30</td>
<td>Introduction to Structured Query Language (SQL). Reading data with SELECT and WHERE. Views <strong>Assignment:</strong> SQL statements pt 1 (due W2b) <strong>Lab:</strong> Install mySql Workbench (due W2b)</td>
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<tr>
<td><strong>Week 2b</strong> Sept 01</td>
<td>SQL Review. Working with MySQL Workbench. Inserting, updating and deleting records, Reformatting data. <strong>Assignment:</strong> RVS db schema. SQL statements pt 2 (due W3a). Working with MySQL Workbench.</td>
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<tr>
<td><strong>Week 3a</strong> Sept 06</td>
<td>Introduction to PHP and PHPStorm. Introduction to PHP Scripting Language and basic tags <strong>Lab:</strong> Assignment Web page (due W3b) <strong>Assignment:</strong> Class schedule database (due W3b)</td>
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<tr>
<td><strong>Week 3b</strong> Sept 08</td>
<td>PHP, MySQL (mysqli). Populating pages with db content. Looping through queries. <strong>Assignment:</strong> Search and Result pages (due 4a)</td>
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<tr>
<td><strong>Week 4a</strong> Sept 13</td>
<td>Php conditional statements. Populating select menus. <strong>Assignment:</strong> Search, Result pages v2 (due 4b)</td>
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<tr>
<td><strong>Week 4b</strong> Sept 15</td>
<td>Review php “if”, dynamic menus. Creating “insert” forms. <strong>Lab:</strong> Db backup/export. <strong>Assignment:</strong> Add, Insert pages (due 5a)</td>
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<tr>
<td><strong>Week 5a</strong> Sept 20</td>
<td>Drill-down workflow 1: Search, Results, Details <strong>Lab:</strong> Search, result, details pages (due 5b) <strong>Assignment:</strong> Project proposal, db sketch and pitch videos (due 6a)</td>
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<tr>
<td><strong>Week 5b</strong> Sept 22</td>
<td>Drill-down workflow 2: Results, Edit, Delete <strong>Assignment:</strong> Edit/update pages. (due 6a)</td>
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</tbody>
</table>
Week 6a  Sept 27  Review drill-down, form objects.
Exam preparation.

Week 6b  Sept 29  Group project pitches and discussions.

Week 7a  Oct 04  **PHP and SQL Examination**

Week 7b  Oct 06  Deconstructing project databases.
**Project:** M1: User Research, Proposal, Db, Logos (due 9b)

*Special Topic* (Agile development, Logo workshop?)

Week 8a  Oct 11  Extended open lab
**Assignment:** Group production schedule/gantt (due 9a)

Week 8b  Oct 13  **Fall Recess**

Week 9a  Oct 18  Deconstructing project databases.
Overview of Tech Courses beyond Acad276
Group project strategies
**Assignment:** Group design comps, critique prep (due 9b)
**Project:** M2: Fronts, search/results, styleguide
(due 12a)

Week 9b  Oct 20  Deconstructing project databases.
Setting, enforcing foreign key constraints.
Source control, github and phpstorm integration.

Week 10a  Oct 25  M1 Design Feedback session
Group Working Session

**Assignment:** Add images to class schedule (due 11b)

Week 11a  Nov 01  Review php includes. Session and client variables.
Login routines.
[Removed] **Lab:** Php log-in, security sandbox (NOT due).

Week 11b  Nov 03  Aggregate SQL.
Intermediate data topics, analytics, machine learning.

Week 12a  Nov 08  Creating emails with php.
User Testing, HCD
**Project:** M3: User Testing (due W13a)
**Project:** M4: Login, admin, most of site (due W14a)
**Lab:** Create “Email search results” functionality (due 11b)
Week 12b  Nov 10  Calling APIS  
Comm, Design Critiques

Week 13a  Nov 15  Paginated results

Week 13b  Nov 17  Revisiting Javascript in data. JSON and UX.  
Transferring data from php queries into JS constructs.

Week 14a  Nov 22  Php frameworks.  
Introduction to Security issues.  
**Project:** M5: Final build (due 12/2)

Week 14b  Nov 24  *Thanksgiving Break*

Week 15a  Nov 29  Unintended Consequences workshop.  
Insights into cloud and Devops. Enterprise db concepts such as transactions and locking. Sub-queries.

Week 15b  Dec 01  Beyond Dev2: server-side technologies, hosting, CMS  
Next-generation development  
*Special Topics*

**Dec 02**  Group Website Final Build due 11:59pm

**Dec 08**  *Final Presentations of Group Projects*
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 Research and Scholarship Misconduct.

Students and Disability Accommodations:

USC welcomes students with disabilities into all of the University’s educational programs. The Office of Student Accessibility Services (OSAS) is responsible for the determination of appropriate accommodations for students who encounter disability-related barriers. Once a student has completed the OSAS process (registration, initial appointment, and submitted documentation) and accommodations are determined to be reasonable and appropriate, a Letter of Accommodation (LOA) will be available to generate for each course. The LOA must be given to each course instructor by the student and followed up with a discussion. This should be done as early in the semester as possible as accommodations are not retroactive. More information can be found at osas.usc.edu. You may contact OSAS at (213) 740-0776 or via email at osasfrontdesk@usc.edu.

Support Systems:

Counseling and Mental Health - (213) 740-9355 – 24/7 on call studenthealth.usc.edu/counseling
Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

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

Relationship and Sexual Violence Prevention Services (RSVP) - (213) 740-9355(WELL), press “0” after hours – 24/7 on call Studenthealth.usc.edu/sexual-assault
Free and confidential therapy services, workshops, and training for situations related to gender-based harm.

Office for Equity, Equal Opportunity, and Title IX (EEO-TIX) - (213) 740-5086 eeo-usc.edu
Information about how to get help or help someone affected by harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants.

Reporting Incidents of Bias or Harassment - (213) 740-5086 or (213) 821-8298 usc-advocate.symplicity.com/care_report
Avenue to report incidents of bias, hate crimes, and microaggressions to the Office for Equity, Equal Opportunity, and Title for appropriate investigation, supportive measures, and response.

The Office of Student Accessibility Services (OSAS) - (213) 740-0776
osas.usc.edu
OSAS ensures equal access for students with disabilities through providing academic accommodations and auxiliary aids in accordance with federal laws and university policy.

**USC Campus Support and Intervention** - (213) 821-4710
campusupport.usc.edu
Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

**Diversity, Equity and Inclusion** - (213) 740-2101
diversity.usc.edu
Information on events, programs and training, the Provost’s Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

**USC Emergency - UPC:** (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call
dps.usc.edu, emergency.usc.edu
Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

**USC Department of Public Safety - UPC**: (213) 740-6000, HSC: (323) 442-120 – 24/7 on call
dps.usc.edu
Non-emergency assistance or information.

**Office of the Ombuds** - (213) 821-9556 (UPC) / (323-442-0382 (HSC)
ombuds.usc.edu
A safe and confidential place to share your USC-related issues with a University Ombuds who will work with you to explore options or paths to manage your concern.

**Occupational Therapy Faculty Practice** - (323) 442-3340 or otfp@med.usc.edu
chan.usc.edu/otfp
Confidential Lifestyle Redesign services for USC students to support health promoting habits and routines that enhance quality of life and academic performance.