



Advanced Back-End Web Development

ITP 405x (4 Units)

Objective

Provide students with the necessary skills to build server-side applications and APIs using frameworks and tools common in the industry.

Concepts

The course will cover how to build server-side web applications and APIs. We will also look at the differences between traditional server-side technologies like PHP and how it differs from Node.js, an asynchronous server-side alternative using JavaScript.

Prerequisites

ITP 303, ITP 304, ACAD 276, or sufficient experience. You should be proficient with the basics of building dynamic web pages using HTML, CSS, SQL, and any server-side technology.

Lecture

Monday 5 - 8:20pm

Required Reading

PHP Object Oriented Solutions by David Powers: Apress, 2013 – There is a free e-book version for USC students at

<https://link-springer-com.libproxy1.usc.edu/book/10.1007%2F978-1-4302-1012-2>.

Grading

Assignments: 40%

Class participation and attendance: 10%

Exam: 20%

Individual final project: 30%

Final course grade is determined by standard formulas:

A	100% - 93%
A-	92% - 90%
B+	89% - 87%
B	86% - 83%
B-	82% - 80%
C+	79% - 77%
C	76% - 73%
C-	72% - 70%

D+ 69% - 67%
D 66% - 63%
F 62% and below

Assignment Extensions

Assignments are due the following week at 11:59pm unless stated otherwise. If a student needs an extension, the student must ask for one from the instructor and extensions will be granted on a case by case basis. If an extension has been granted, the assignment must be turned in within 5 days after the original due date, unless stated otherwise. It is the responsibility of the student to notify the instructor and the TA once the assignment with the extension has been completed. Failure to turn in assignments by the due date or the extended due date will result in a 0.

Academic Integrity

The use of unauthorized material, communication with fellow students during an examination, attempting to benefit from the work of another student, and similar behavior that defeats the intent of an examination or other class work is unacceptable to the University. It is often difficult to distinguish between a culpable act and inadvertent behavior resulting from the nervous tension accompanying examinations. When the professor determines that a violation has occurred, appropriate action, as determined by the instructor, will be taken.

Although working together is encouraged, all work claimed as yours must in fact be your own effort. Students who plagiarize the work of other students will receive zero points and possibly be referred to Student Judicial Affairs and Community Standards (SJACS).

All students should read, understand, and abide by the University Student Conduct Code listed in SCampus, and available at:

<http://www.usc.edu/student-affairs/SJACS/nonacademicreview.html>

Students with Disabilities

Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me (or to your TA) as early in the semester as possible. DSP is located in STU 301 and is open 8:30 a.m. - 5:00 p.m., Monday through Friday. The phone number for DSP is (213) 740-0776.

Course Outline

Before class	Environment setup Introduction to Git and GitHub
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Reading: Object-Oriented Programming Basics

1/10	Class Introduction Database-driven Web Pages with PHP Review SQL Joins PDO, Prepared Statements, and Parameter Binding Deploying PHP to Heroku Assignment 1
1/17	MLK
1/24	The Model-View-Controller (MVC) Pattern Laravel - Routes, Controllers, Query Builder, and Views Deploying Laravel to Heroku Assignment 2
1/31	Laravel - CRUD, Flash Messages, Data Validation Assignment 3
2/7	Laravel - Object Relational Mapping (ORM) Assignment 4
2/14	Laravel - Running Migrations, Authentication, and Middleware Assignment 5 - Final Project Overview, Setup, and Database
2/21	Presidents' Day
2/28	Laravel - Writing Migrations, Mass Assignment, and Middleware Assignment 6
3/7	Exam
3/14	Spring Recess
3/21	Laravel - Authorization with Gates and Policies Assignment 7
3/28	Laravel - Mail and Queues
4/4	Consuming Third-Party APIs Caching Assignment 8
4/11	Laravel - Building a REST API

4/18 Introduction to Node.js and Asynchronous Programming
Building a REST API

4/25 Guest Lecture: NoSQL and MongoDB

The final project is due on 5/1 at 11:59pm.