CS418/518: Web Programing Syllabus

Fall 2022

Instructor and Course Information

Instructor
Jian Wu

Email
jwu@cs.odu.edu

Class Room
DRGS 2115

Class Time
3 pm – 4:15 pm, T/R

First Class Date
Tuesday, 8/30/2022

Last Class Date
Thursday, 12/08/2022

Prerequisites
CS312: Internet Concepts;
CS330: Object-Oriented Programming and Design.

Virtual Office Hours
4:15 pm – 5 pm, Tuesday or by appointment

TA
Muntabir Choudhury
T/R: noon
https://odu.zoom.us/j/93588258696

General Information

Description

This class will introduce Web Programming: the process of writing interactive applications accessible through the WWW. We will develop in the LAMP environment: Linux, Apache, PHP, MySQL, and Elasticsearch. In addition, we will introduce JavaScript, a popular client-side web programming language, the Model-View-Controller architecture, and security features such as ReCaptcha and the cross-site vulnerability (XSS) and clickjacking attack. Emphasis will be on the integration of these components for a useful application. Lectures will provide the overview of various concepts and the class will be centered around development of a semester-long project. Students have the freedom to build a web application from scratch or based on *open-source frameworks*.

Successful students will be proficient in LAMP stack development and modern web design. The course will give best practice instruction and guidance in developing a website whose primary goal is to help users find useful online resources using search engines. Students will be evaluated on progressive milestones based on the instructor's specified features. The course will put weight on writing quality web programming codes and implementing different functions. Git will be used for version control.

Course Delivery Method

This course will be held in a hybrid synchronous mode. Student who registered "live" (face-to-face) are anticipated to take the class in the classroom. Students who registered "Web2", "Web5", or "Web7" are anticipated to take the class online. **All students are anticipated to show up during the class time, unless they are sick or under university policies.**

Grading Policy

Students are graded based on the following aspects.

- Attendance: 10%
- Assignment: 5%
- Project: 85%
  - Milestone 1: 25% (demo 20% + report 5%)
  - Milestone 2: 30% (demo 20% + report 10%)
  - Milestone 3: 30% (demo 20% + report 10%)

Grading Chart

A	A-	B+	B	B-	C+	C*
94-100	90-93.99	87-89.99	84-86.99	80-83.99	77-79.99	74-76.99

A provisional graduate student who receives one C in any of the required prerequisites will be subject to removal from the graduate program. A graduate student must maintain at least a 3.0 grade point average to graduate. (ODU Grading Policy)

Course Materials

Required Text

There is no required textbook. Three recommended books are

Learning PHP, MySQL & JavaScript: With jQuery, CSS & HTML5 (Learning PHP, MYSQL, Javascript, CSS & HTML5) 5th Edition by Robin Nixon

Laravel: Up & Running: A Framework for Building Modern PHP Apps 2nd Edition by Matt Stauffer

A Smarter Way to Learn JavaScript. The new tech-assisted approach that requires half the effort by Mark Myers

Optional Materials

- Laravel website: https://laravel.com/docs/9.x
- The Ultimate Guide to Elasticsearch in Laravel Application
- Integrating Elasticsearch with your Laravel app
- Elasticsearch JavaScript Client
- Course materials and other resources including slides and assignments will be distributed as the course proceeds in the semester

Hardware and Software Requirements

Students will need frequent access to a PC (with Windows 10) or a Mac (with MacOS 10.14+) capable of hosting software development activities or of connecting to remote servers where such activities can be performed. The course projects will be built on a virtual environment hosted by the ODU CCI Academic environment. The course will introduce students to a wide variety of open-source software packages. Students will need to install some of these on their assigned virtual machine.

Course Schedule

Week	Date	Topic	Exercises
1	Tuesday, 8/30/2022	Course Introduction and web architecture	GitHub Preparation

Week	Date	Topic	Exercises
1	Thursday, 9/1/2022	LAMP architecture	System preparation
2	Tuesday, 9/6/2022	PHP-1: structure and control	
2	Thursday, 9/8/2022	PHP-2: arrays, functions, and sessions	GitHub and System preparations due
3	Tuesday, 9/13/2022	MySQL and Milestone 1 specifications	Milestone 1 starts
3	Thursday, 9/15/2022	PHP-3: cookies, file I/O, images	
4	Tuesday, 9/20/2022	PHP-4: CSS and the Laravel framework	
4	Thursday, 9/22/2022	Ruby on Rails (Lamia Salsabil)	
5	Tuesday, 9/27/2022	JavaScript-1: variables and operators	
5	Thursday, 9/29/2022	JavaScript-2: expression and flow control; Milestone 2 specifications	
6	Tuesday, 10/4/2022	Milestone 1 Demo Session A	
6	Thursday, 10/6/2022	Milestone 1 Demo Session B	Milestone 1 report due; Milestone 2 starts
7	Tuesday, 10/11/2022	Fall Holiday (no classes)	
7	Thursday, 10/13/2022	JavaScript-3: Validation and error Handling	
8	Tuesday, 10/18/2022	JavaScript-4: jQuery	
8	Thursday, 10/20/2022	MVC Architecture	
9	Tuesday, 10/25/2022	Elasticsearch (ES) and Kibana	
9	Thursday, 10/27/2022	Integrating ES with PHP	
10	Tuesday, 11/1/2022	Integrating ES with JavaScript	
10	Thursday, 11/3/2022	Web design principles; How to make a good presentation; Milestone 3 specifications	Milestone 3 starts
11	Tuesday, 11/8/2022	Election Day Holiday (no classes)	
11	Thursday, 11/10/2022	Milestone 2 Demo Session A	
12	Tuesday, 11/15/2022	Milestone 2 Demo Session B	Milestone 2 report due
12	Thursday, 11/17/2022	reCAPTCHA, spell check, and speech to text APIs	
13	Tuesday, 11/22/2022	Invited speaker (Kehinde Ajayi)	

Week	Date	Topic	Exercises
13	Thursday, 11/24/2022	Thanksgiving Holiday (no classes)	
14	Tuesday, 11/29/2022	Security features: XSS and clickjacking vulnerabilities	
14	Thursday, 12/1/2022	Project time	
15	Tuesday, 12/6/2022	Milestone 3 Demo Session A	
15	Thursday, 12/8/2022	Milestone 3 Demo session B	Final report due

* Course schedules are subject to change depending on availability of speakers and the instructor.

Exam Schedule

There is no exam for this course.

Additional Information and Resources

Attendance Policy

Attendance is required. One non-excused absence causes a deduction of 1% on attendance until all points are deducted in this aspect. If more than 11 absences are observed, the student automatically get an F for this course. In case of absence due to legitimate reasons, including but not limited to sickness, University-approved curricular and extracurricular activities (such as athletic contests), career interviews, the death of family members, students should be prepared to provide documentation **before classes start**. Makeup classes are not available. Students can discuss with the instructor about course content in office hours.

Late Submission Policy

Project reports are due at midnight on the specified dates. If a student cannot deliver the reports or projects, he/she MUST provide written evidence (such as a doctor's note) as a proof. Additional time can be granted on a case-by-case basis. Submissions after deadlines without legitimate reasons are counted 50% of the real score, e.g., if a report earns 80 points, only 40 points are counted.

Features not implemented by the milestone they belong to received zero points. If a feature is implemented later, it will receive 50% of its points. For example, if a feature is worthy of 2 points and a student failed to fully implement it, the student will receive 0 point for that feature by the milestone. However, if the student successfully implements it in a later milestone (of course before the last milestone), the student will receive 1 point for that feature or another partial credit (no more than 1 point) at the discretion of the instructor.

Academic Integrity

Individual assignments must be completed independently. Students are encouraged to form study groups and to learn from their peers. However, discussion on projects and reports should be limited to general approaches to solutions. **Specific answers should never be discussed**. ODU's policy regarding Academic Integrity must be followed.

- **Cheating**: Using unauthorized assistance, materials, study aids, or other information in any academic exercise (Examples of cheating include, but are not limited to: (1) using unapproved resources or assistance to complete an assignment, paper, project, quiz or exam; collaborating in violation of a faculty member's instructions; (2) submitting the same, or substantially the same, paper to more than one course for academic credit without first obtaining the approval of faculty).

- **Plagiarism**: Using someone else's language, ideas, or other original material without acknowledging its source in any academic exercise. Examples of plagiarism include but are not limited to submitting a research paper obtained from a commercial research service, the Internet, or from another student as if it were original work; or making simple changes to borrowed materials while leaving the organization, content, or phraseology intact. Plagiarism also occurs in a group project if one or more of the members of the group does none of the group's work and participates in none of the group's activities but attempts to take credit for the work of the group.
- **Fabrication**: Inventing, altering, or falsifying any data, citation or information in any academic exercise. Examples of fabrication include, but are not limited to: (1) citation of a primary source which the student actually obtained from a secondary source; (2) invention or alteration of experimental data without appropriate documentation (such as statistical outliers).
- **Facilitation**: Helping another student commit, or attempt to commit, any Academic Integrity violation, or failure to report suspected Academic Integrity violations to a faculty member. An example of facilitation may include circulating course materials when the faculty member has not explicitly authorized their use.

Copyright

All course materials students receive or to which students have online access are protected by copyright. Students may use course materials and make copies for their own use as needed. **Unauthorized distribution and/or uploading of materials without the instructor's express permission is strictly prohibited.**

Disability Accommodation

In order to receive consideration for reasonable accommodations, you must contact the appropriate services office will provide you with an accommodation letter. Please share this letter with your instructors and discuss the accommodations with them as early in your courses as possible. The detail of disability accommodations is documented in ODU policy #4500.

Discrimination and Harassment

- The university is committed to equal access to programs, facilities, admission, and employment for all persons. It is the policy of the university to maintain an environment free of harassment and free of discrimination against any person because of age, race, color, ancestry, national origin, religion, creed, service in the uniformed services (as defined in state and federal law), veteran status, sex, sexual orientation, marital or family status, pregnancy, pregnancy-related conditions, physical or mental disability, gender, perceived gender, gender identity, genetic information or political ideas. Discriminatory conduct and harassment, as well as sexual misconduct and relationship violence, violates the dignity of individuals, impedes the realization of the university's educational mission, and will not be tolerated.
- Gender-based sexual harassment, including sexual violence, are forms of gender discrimination in that they deny or limit an individual's ability to participate in or benefit from University programs or activities. These policies shall not be construed to restrict academic freedom at the university, nor shall they be construed to restrict constitutionally protected expression. The discrimination policy is coded in University Policy #1005.