OKANAGAN COLLEGE

COSC 419: Topics in Computer Science

Fall 2020 Term 1, Section 001 Schedule:

Lecture	Tuesday, 8:30AM – 9:50AM, Friday, 12:00PM – 1:20PM
Lab 01	Tuesday, 3:00PM – 4:50PM

Instructor: Matthew Fritter
Office Hours: TBD
Email: mfritter@okanagan.bc.ca
Website: Course notes, labs, and announcements will be posted on Moodle and GitHub:
https://github.com/MattFritter/COSC-419-Fall-2020

Calendar Description: This course is an introduction to full-stack web development, with an emphasis on building web software stacks and developing secure, maintainable interactive web applications. This includes back-end development using Python and PHP frameworks, content management systems, and databases; frontend development using HTML5, CSS, JS, and AJAX; and systems administration tasks using SSH, Bash, Git, and Chron. Students completing this course will be comfortable with web development at all levels of the web software stack, and capable of provisioning and maintaining a web server.

Prerequisites: Fourth-year standing.

Required Text: None. All course materials will be provided through Moodle and GitHub.

Lecture Topics:

- Working with and configuring remote web servers via SSH
- Installation, configuration, and use of common back-end components, including the Flask and Laravel web frameworks, Apache, and SQL databases
- Development of responsive front-end web pages using HTML5, CSS, and JavaScript
- Development of dynamic web applications using both front-end (asynchronous JS requests) and back-end (framework and database) driven techniques
- Comprehension of common web server attack vectors, the use of firewalls and dedicated security modules such as Fail2Ban
- Systems administration of remote UNIX/LINUX web servers using automation and deployment tools such as Git, Bash, and Chron

Learning Outcomes:

Students who complete this course should be capable of working confidently with remote web servers to develop dynamic, complete web applications. Students will be able to start with an un-configured web server, appropriately configure it according to their web development needs, and

perform common systems administration tasks, such as setting up automatic backups and security software. Students will also come away from this course with experience in two major common web frameworks; the Laravel PHP framework, and the Python Flask framework.

Tentative Course Schedule:

Week	Description	Date
1	**No Labs**	Sep 8 - 11
2	Concepts of Full Stack Development, Initial Stack Configurations	Sep 14 - 18
3	Introduction to Python Flask, Configuration of Flask web servers	Sep 21 - 25
4	Front-End development using HTML5; Developing basic database-driven Flask applications	Sep 28 - Oct 2
5	Building Dynamic Web Applications with Flask, use of Cookies and Asynchronous Web Requests	Oct 5 - Oct 9
6	Introduction to PHP, Configuring PHP on Linux Systems	Oct 12 - 16
7	Laravel Framework – Configuration, Controllers and Routing	Oct 19 - 23
8	Laravel Framework – Advanced routing, Middleware, and QueryBuilder	Oct 26 - 30
9	Web Security – Identifying Attack Vectors, Server Hardening	Nov 2 - 6
10	Web Security – Using SELINUX and Apache modules to secure web servers	Nov 9 - 13
11	Automation – Using Bash and Chron to perform automated maintenance	Nov 16 - 20
12	Web Statistics – Integrating statistics tracking into web applications	Nov 23 - 27
13	**No Labs – Last Week of Classes – Final Exam Review**	Nov 30 – Dec 4

Labs: Lab material will be available on Moodle. You will have one week to complete each lab. I will be available via Moodle livestream (or Zoom) to provide assistance and answer questions during the lab time blocks, and will also give example demonstrations during these periods. Labs will begin the second week of classes.

Exams: There will be four small quizzes, spaced throughout the term, each worth 5%. Quizzes will be announced on Monday and will be available on Moodle until the end of the week. There will be a final exam held during the final exam period, time and date TBD. Both the midterm and final exam will be online using Moodle, and may include both practical and question components.

Evaluation:

Item	Weight
8 Lab Assignments, each worth 5%	50%
Four Quizzes, Online, each worth 5%	20%
Final Exam, Online	30%

Important Dates:

- First Day of Class: September 8th
- Last Day to Register or Drop: September 18th
- Thanksgiving: October 12th (Statutory Holiday)
- Remembrance Day: November 11th (Statutory Holiday)
- Last Day of Classes: December 7th
- Final Exam Period: December 9th – December 19th

Academic Integrity:

It is Okanagan College Policy that students are aware of policies regarding academic misconduct (i.e. cheating and plagiarism). These policies are outlined in the 2019-2020 OC Calendar. If you are not aware of policies be sure to read this information. Cheating and plagiarism are summarized below. You are responsible for reading the full description from the OC Calendar, or on the website: https://webapps-5.okanagan.bc.ca/ok/Calendar/AcademicIntegrity

Cheating: includes but is not limited to dishonest or attempted dishonest conduct during tests or examinations in which use is made of books, notes, diagrams or other aids excluding those authorized by the examiner. It includes communicating with others for the purpose of obtaining information, copying from the work of others and purposely exposing or conveying information to other students who are taking the test or examination.

Plagiarism: is the presentation of another person's work or ideas without acknowledgment. Students in doubt should take care to avoid unintentional plagiarism by learning proper scholarly procedures.