OKANAGAN COLLEGE

COSC 417 – Topics in Networking

Winter 2020 Section 001

Schedule:

Lecture	Wednesday, 8:00AM – 9:20AM, **E 301**
Lecture	Friday, 8:00AM – 9:20AM, **E 301**
Lab 01	Thursday, 1:30PM – 3:20PM, **E 301**

Instructor: Matthew Fritter
Office Hours: Wednesdays and Fridays, 10:00AM – 3:00PM
Email: mfritter@okanagan.bc.ca
Website: Course notes, labs, and announcements will be posted on Moodle and GitHub:
https://github.com/MattFritter/COSC417-Topics-in-Networking

Calendar Description: This course covers advanced topics in networking, with a focus on network architecture and infrastructure. This includes the routing backbone of the World Wide Web, BGP and IGP routing protocols and how they affect network traffic flow, DNS propagation, security, and manipulation, and WLAN networking security.

Prerequisites: COSC 328 or co-requisite of NTEN 317, minimum grade of 60%.

Co-requisites: COSC 318, minimum grade of 60%.

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

Lecture Topics:

- BGP and IGP routing protocols, autonomous systems, and routing policy
- Analyzing routing networks, using looking glass servers to view routing tables, mapping autonomous systems
- DNS propagation and running a DNS name server. Manipulating and blocking DNS resolution, security of the DNS system
- WLAN networking security – encryption, man-in-the-middle attacks, packet sniffing

Learning Outcomes:
Students who complete this course will understand how routing is performed, and be able to perform analysis of routing tables and paths. Students will learn how to run a DNS server, and how the DNS system can be manipulated, and the security issues that can arise from DNS services. Students will also learn about security principles and potential risks associated with WLAN networks.

Tentative Topic Schedule:

Week	Description	Date
1	**No Labs – Course Introduction**	Jan 6 - 10
2	Autonomous systems, BGP and IGP routing	Jan 13 - 17
3	Looking glass servers, routing tables, mapping routes	Jan 20 - 24
4	Routing policies and common routing errors, Quiz #1	Jan 27 - 31
5	Introduction to DNS protocols	Feb 3 - 7
6	How DNS servers work, running a DNS server	Feb 10 - 14
7	**Study Break**	Feb 17 - 21
8	DNS server manipulation, blocking domains	Feb 24 - 28
9	DNS security concerns – DNS spoofing, amplification	Mar 2 - 6
10	DNS security wrap-up, Quiz #2	Mar 9 - 13
11	WLAN principles, man-in-the-middle attacks	Mar 16 - 20
12	WLAN – Packet sniffing, encryption	Mar 23 - 27
13	WEP, WPA, WPA2, additional topics **TBD**	Mar 30 – Apr 3
14	**No Labs – Last Week of Classes (Final Exam Prep)**	Apr 6 - 10

Labs: You may complete lab tasks in the lab or at home. Details on how to submit your lab will be included with each lab document. Lab attendance is not mandatory, but is encouraged.

Exams: There will be two quizzes, held in-class. Quizzes will be announced in-class and on Moodle the week before. There will be a final exam held during the final exam period, time and date TBD.

Evaluation:

Item	Weight
6 Lab Assignments	40%
Two in-class Quizzes, each 15%	30%
Final Exam	30%

Important Dates:

- First Day of Class: January 6th
- Last Day to Register or Drop: January 17th
- Study Break: February 18th – 21st
- Last Day of Classes: April 9th
- Final Exam Period: April 14th – April 24th

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.