SE 14-443: Network Cyber Security Project
Department of Software Engineering
Achi Racov Faculty of Engineering
Kinneret College on the Sea of Galilee

Instructor: Michael J. May

Semester 2 of 5786

1 Course Details

The course lecture meets at **8:00am–10:00am** on Sundays (**2** hours of lecture). The recitation meets at **10:00am–12:00pm** on Sundays (**2** hours of recitation). Both lecture and recitation take place in Room 6201.

This is a project based flipped classroom course with little frontal lecture a lot of hands on network cyber attack work.

2 Prerequisites

The prerequisite for this course is 12-331: Introduction to Computer Networks.

3 Overview

The course is project based on the topics of network protocol and web cyber attack and defense. The course is divided into three parts:

Part 1. Network cybersecurity research

Part 2. Network protocol cybersecurity and attacks.

Part 3. Web cybersecurity and attacks

Each part of the course has an accompanying assignment and presentation associated with it.

4 Learning Outcomes

At the end of the course, the student will be able to:

1. Research and present research findings from recent academic publications on network cybersecurity.
2. Perform network protocol exploit tasks and present findings to others.
3. Perform web exploit tasks and present findings to others.

5 Lecture Schedule

The schedule for the course is as shown in the following table.

	#	Subject
	1	Course introduction - Network cyber security basics
Part 1	2–3	Cyber security research work
	4–5	Cyber security research presentations
Part 2	6–7	Network protocol cyber security lab work
	8–9	Network protocol cyber security lab presentations
Part 3	10–11	Web cyber security lab work
	12–13	Web cyber security lab presentations

6 Assignments

There will be three assignments and projects during the course of the semester. The assignment will include independent research. The projects will involve significant hands on cybersecurity tasks. Both will involve presentation to others.

Details of the assignments will be given out during the semester.

7 Attendance

Attendance of lectures sessions is expected and required for this course. As per College policy, a student who misses 20% or more of the lectures of targil sessions may be expelled from the course. Students who miss lectures do so at their own risk and expense and will be expected to make up missed material on their own. Students who know they will be missing two or more lectures due to circumstances beyond their control should inform the instructor as soon as possible beforehand.

Attendance will not be taken directly during class, however, there will be quizzes some weeks and there will not be an opportunity to make up missed quizzes.

7.1 Decorum

Students who attend lecture are expected to give their full attention to the material. Reading newspapers, talking on cellular phones, text messaging, or other distracting behavior will not be tolerated.

Students must arrive to lectures **on time.** After ten minutes into class, the door will be locked and no student will be allowed entry. The door will be opened at the next break in the lecture (approximately every 50 minutes). Students who need to leave during lecture for some urgent matter must leave quietly and may return at the next break.

As per college policy, the instructor reserves the right to expel from the classroom any student who is disturbing the lecture or others.

8 Submissions

8.1 How to Submit Work

Students must submit work via the system given for the assignment. Some assignments will be submitted via Moodle. Some will be submitted via private per-assignment GitHub repositories managed by the instructor. Each assignment will clearly state which system is to be used. Materials sent via email, posted to unrelated GitHub repositories, or submitted via any other method risk being ignored or ungraded without consideration of their merits.

If work is submitted by a team of students via Moodle, every student on the team must submit via Moodle. If a student's name appears on a submission, but the student doesn't submit a copy as well, the student **will not** receive a grade for the assignment.

If work is submitted by a team of students via GitHub, every student on the team must make at least one significant code commit to the GitHub repository. If a student's name appears on a submission, but the student doesn't perform at least one significant code commit to the assignment repository, the student **will not** receive a grade for the assignment.

8.2 Late Submission Policy

Students are expected to be on time with their project submissions and assignments. Each assignment must be turned in by the date it is due.

9 Cheating

Cheating of any sort will not be tolerated. Student collaboration is encouraged, but within limits as set forth in the college's rules on academic integrity. Any students caught cheating will be immediately referred to the department head and the Dean and may receive a failing grade for the course.

Cheating includes:

- Copying information, content, or verbatim text from other students, internet sites, books (other than the ones listed in the bibliography), other unaffiliated individuals to answer questions, solve problems, or aid in programming projects.
- Copying or submitting source code, documentation, or other programming aids **without attribution** from other students, **web sites**, online repositories, text books, open source programs, or other unaffiliated individuals.
- Project teams which submit work which is identical or substantially identical to work submitted by other project teams, whether current or from previous years.
- Other forms of academic misconduct as described on the site: `https://catalog.upenn.edu/pennbook/code-of-academic-integrity/` or as reasonably assessed by the instructor, program head, or dean.

If you have any questions about what constitutes cheating in the above rules, contact the instructor as early as possible.

10 Network Protocol and Web Cyber Security Projects

A significant portion of the grade will be derived from the network protocol and web security projects and presentations. For the projects, each student will perform a network cybersecurity related lab, present the lab and its findings, and create an in class quiz that other students will perform to test their understanding of the material presented.

All students must attend the network cybersecurity presentations and participate in the quizzes. The quiz grades will be included in the final grade for the course.

11 Exams

There is no exam.

12 Grading

Final grades will be calculated by combining grades from the assignments and project. The grades are weighted as follows. All parts of the grade are required:

20%	Cybersecurity research presentation
35%	Network protocol cybersecurity project and presentation
35%	Web cybersecurity project and presentation
10%	Project presentation quiz grades

13 Books

The following books are used in the class. They are shown below in the bibliography as well.

The main book is:

- Du. *Computer & Internet Security: A Hands On Approach* [2]

Additional helpful books include:

- Salmon, Levesque, and McLafferty. *Applied Network Security : Master the Art of Detecting and Averting Advanced Network Security Attacks and Techniques*[3]
- Dordal. An Introduction to Computer Networks. Loyola University Chicago. Version 2.0.11 [1]

The library has copies of the books listed, but students are encouraged, to purchase one or more of the books listed.

14 Contact Information

Instructor: Michael J. May
Web: `https://mjmay-kinneret.github.io/`

References

[1] Peter L. Dordal. *An Introduction to Computer Networks*. Online, Shabbona, IL, USA, 2.0.11 edition, Jul 2023. http://intronetworks.cs.luc.edu/current/ComputerNetworks.pdf.

[2] Wenliang Du. *Computer & Internet Security: A Hands-on Approach*. Wenliang Du, 3rd ed. edition, May 2022.

[3] Arthur Salmon, Warun Levesque, and Michael McLafferty. *Applied Network Security : Master the Art of Detecting and Averting Advanced Network Security Attacks and Techniques.* Packt Publishing, 2017.