

Introduction to Cybersecurity

Syllabus

Marc J. Dupuis, Ph.D.

Office Hours:

Monday/Wednesday, 10:30 AM – 11:30 AM, CP 127, or by appt.

Description:

This course provides an introduction to cybersecurity. Topics include hacking, social networks, privacy, cryptography, legal aspects, social implications, password management, digital forensics, computer networking, wireless security, and ethical issues. The course focuses on individual users and their role in protecting themselves from various cybersecurity threats. No technical experience needed.

Prerequisites:

None.

Holiday(s):

Monday, May 25th is Memorial Day. There will be no class on this day.

Student Learning Goals:

Upon successful completion of the course, students should be able to:

- Describe the basic components of computer networking.
- Examine the concept of privacy and its legal protections.
- Explain the primary concepts involving encryption.
- Perform basic computer forensics.
- Develop and execute a password management plan.
- Describe the social implications of cybersecurity.
- Understand the risks and benefits of social networks.
- Conduct various ethical hacking procedures (e.g., password cracking, Wi-Fi cracking).
- Describe the basic ethical considerations related to cybersecurity.

UWT Student Learning Objectives that this course contributes to

- *Global Perspective:* Students will develop an awareness of the interrelationships among personal, local, and global entities, as well as gain understanding of issues of well-being and sustainability. Students will also learn about the importance of the social, cultural, economic, scientific, and environmental differences that mark world regions.
- *Inquiry and Critical Thinking:* Students will acquire skills and familiarity with modes of inquiry and examination from diverse disciplinary perspectives, enabling them to access, interpret, analyze, quantitatively reason, and synthesize information critically.
- *Civic Engagement:* Students will define their roles and responsibilities as members of a broader community and develop an understanding of how they can contribute to that community for the greater good.
- *Communication/Self-Expression:* Students will gain experience with oral, written, symbolic and artistic forms of communication and the ability to communicate with diverse audiences. They will also have the opportunity to increase their understanding of communication through collaboration with others to solve problems or advance knowledge.

Textbook:

Custom eBook: \$66.56 at <http://www.jblearning.com/catalog/9781284005240/>

Topics Covered

1. Computer Networking
2. Cryptography
3. Password Management
4. Hacking
5. Wireless security
6. Social Networks
7. Privacy
8. Legal Aspects
9. Social Implications
10. Digital Forensics
11. Ethical issues as it relates to cybersecurity

Assignments for the Course

In-Class Quizzes / Activities: There will be 17 in-class quizzes / activities. The quizzes will cover the material for the week, including the assigned reading(s). These quizzes are individual closed-book and closed-note efforts. When an activity is done in lieu of a quiz, you will be graded based on your participation in the activity and any deliverable(s) associated with the activity. Your two lowest scores will be dropped from your overall grade.

Labs / Assignments: There will be a total of 6 labs / assignments throughout the quarter. You will be asked to apply the knowledge you have recently acquired to a scenario, set of tasks, a specific problem, etc., so that you may better understand the concepts of this course.

Professional Presentation: During the quarter, you will be required to give a 3-5 minute presentation on a cybersecurity topic of your choosing. You may choose to use PowerPoint slides if you like, but no more than 100 words total. Those that are over the limit cannot be used. This total does not include your introductory slide and closing slide. The slides must be emailed to the instructor by midnight the day before you present.

Team Project: You will work in a team of 3-4 individuals. The course long project will result in five deliverables that address a specific cybersecurity topic. It is important that you involve yourself in each deliverable so that you have a solid foundation for applying the knowledge and skills you will acquire in this project to your own life.

Midterm and Final: There will be a comprehensive midterm during Week 5 and final during Week 10. Each exam will consist of a combination of multiple choice and short answer questions.

Course Grading

Assignment	Week(s)	Points	Percentage
In-Class Quizzes / Activities (17 total)	1-10	240	24%
Labs / Assignments		300	30%
Lab / Assignment 1	2	50	5%
Lab / Assignment 2	4	50	5%
Lab / Assignment 3	6	50	5%
Lab / Assignment 4	7	50	5%
Lab / Assignment 5	8	50	5%
Lab / Assignment 6	10	50	5%
Professional Presentation	2-9	50	5%
Team Project Deliverables		250	25%
Deliverable 1: Research	3	50	5%
Deliverable 2: Development	5	50	5%
Deliverable 3: Draft of Final Product	9	50	5%
Deliverable 4: Presentation	10	50	5%
Deliverable 5: Final Product	11	50	5%
Comprehensive Exams		160	16%
Midterm	5	80	8%
Final	10	80	8%
TOTAL		1000	100%

Course Schedule

Week	Day	Topic	Readings	Assignment(s) Due
1	1 (M)	Introduction	Chapter(s): 1	
	2 (W)	Computer Networks	Chapter(s): 2	
2	3 (M)	Computer Networks	Chapter(s): 3	Lab / Assignment 1
	4 (W)	Computer Networks	Chapter(s): 4-5	
3	5 (M)	Cryptography	Chapter(s): 6	Team Project Deliverable 1: Research
	6 (W)	Cryptography	Chapter(s): 7	
4	7 (M)	Cryptography	Chapter(s): 8	Lab / Assignment 2
	8 (W)	Access Controls	Chapter(s): 9-10	
5	9 (M)	Access Controls	Chapter(s): 11	Team Project Deliverable 2: Development ----- MIDTERM EXAM
	10 (W)	Threats	Chapter(s): 12	
6	11 (M)	Threats	Chapter(s): 13	Lab / Assignment 3
	12 (W)	Threats	Chapter(s): 14-15	
7	13 (M)	Forensics	Chapter(s): 16-17	Lab / Assignment 4
	14 (W)	Forensics	Chapter(s): 18	
8	15 (M)	Forensics	Chapter(s): 19-20	Lab / Assignment 5
	16 (W)	Forensics	Chapter(s): 21-22	
9	Memorial Day			Team Project Deliverable 3: Draft of Final Product
	18 (W)	Privacy	Chapter(s): 23	
10	19 (M)	Privacy	Chapter(s): 24 <i>Optional: 25-26</i>	Team Project Deliverable 4: Presentation ----- FINAL EXAM ----- Lab / Assignment 6
	20 (W)	Ethics & Free Speech	Chapter(s): 27-29	
11				Team Project Deliverable 5: Final Product

General Criteria for Written Assignments:

Your work will be graded based on its clarity, organization, balance, amount of pertinent detail included, depth and clarity of evaluative and analytical comments, and preparation. It will also be graded on the extent to which a good understanding of the material presented in the course is shown and on the extent to which directions are followed. If evaluative or analytical comments are required, they should be supported by factual evidence, either from readings or other documents. Other aspects of individual assignments may also be included in the grading.

Work that shows a lack of understanding of subject matter, is unclear or poorly organized, contains few or irrelevant details, does not follow directions, contains little or unsubstantiated evaluative commentary, or is poorly written or prepared (e.g., typos, grammatical errors) will receive low grades.

Students may want to plan to take draft versions of their writing assignments to the Writing Center for assistance with meeting these criteria and sharpening their writing skills. Information on scheduling an appointment can be found online at: <http://www.tacoma.washington.edu/tlc/> Additionally, you may be able to receive help online, remotely.

General Criteria for Class Presentations:

Your class presentation will be graded primarily on the following:

- Statement of goals and objectives
- Presentation of ideas
- Review of main concepts
- Selection of information level appropriate to audience
- Use of supporting materials or examples
- Selection of exercises or practice
- Level of participation from audience solicited
- Eye contact
- Voice quality
- Poise/pacing
- Enthusiasm/interest level

Good presentations will have:

- A brief statement of goals and objectives
- Clear, organized presentation of ideas and concepts
- Brief review of main concepts
- Selection of information level appropriate to the audience
- Use of well-selected supporting materials or examples
- Elicit a high level of participation from the audience
- Engage in consistent eye contact with all audience members
- Be delivered clearly, sufficiently loudly, in a calm, unhurried manner, with enthusiasm and interest

Course Conduct

ATTENDANCE:

STUDENTS ARE EXPECTED TO ATTEND **ALL** CLASSES, **PREPARED TO PARTICIPATE IN THAT DAY'S ACTIVITIES.**

TIME:

Class meets twice per week with part of that time used for lab, or used for in-class projects. If you are late to class or have to leave early (either not recommended), you are responsible to get the class information from other students. If you are going to have a problem arriving on time, please talk to the instructor, as this is disruptive to the class as a whole.

PARTICIPATION:

As stated in the syllabus, class participation is important. Please read the assignments **before** coming to class. Both the instructor and the other students will presume you have done so, and discussions will focus on the assigned areas.

ASSIGNMENTS:

Assignments are due the date indicated in the syllabus, unless otherwise stated by the instructor. Penalty of 5 percentage points deduction per day late for late assignments. For example, if you earned a score of 85% on an assignment, but it was 3 days late then the final score would be 70%. Assignments over a week late not accepted. No exceptions, unless absence approved in advance.

SUCCESS:

Maintain the pace of the class

COMPUTER ACCESS:

Students are expected to have access to a computer (i.e., lab or personal computer)

Overall Course Grading Criteria

Letter Grade	Numeric Grade	Percentage	Quality of Performance
A	4.0	99.0 – 100.0	Superior performance in all aspects of the course with work exemplifying the highest quality. Unquestionably prepared for subsequent courses in field.
	3.9	97.0 – 98.99	
A-	3.8	95.0 – 96.99	Superior performance in most aspects of the course; high quality work in the remainder. Unquestionably prepared for subsequent courses in field.
	3.7	93.0 – 94.99	
	3.6	91.0 – 92.99	
	3.5	89.0 – 90.99	
B+	3.4	87.0 – 88.99	High quality performance in all or most aspects of the course. Very good chance of success in subsequent courses in field.
	3.3	85.0 – 86.99	
	3.2	83.0 – 84.99	
B	3.1	81.0 – 82.99	High quality performance in some of the course; satisfactory performance in the remainder. Good chance of success in subsequent courses in field.
	3.0	80.0 – 81.99	
	2.9	79.0 - 79.99	
B-	2.8	78.0 - 78.99	Satisfactory performance in the course. Evidence of sufficient learning to succeed in subsequent courses in field.
	2.7	77.0 - 77.99	
	2.6	76.0 - 76.99	
	2.5	75.0 - 75.99	
C+	2.4	74.0 - 74.99	Satisfactory performance in most of the course, with the remainder being somewhat substandard. Evidence of sufficient learning to succeed in subsequent courses in field with effort.
	2.3	73.0 - 73.99	
	2.2	72.0 - 72.99	
C	2.1	71.0 - 71.99	Evidence of some learning but generally marginal performance. Marginal chance of success in subsequent courses in field.
	2.0	70.0 - 70.99	
	1.9	69.0 - 69.99	
C-	1.8	68.0 - 68.99	Minimal learning and substandard performance throughout the course. Doubtful chance of success in subsequent courses.
	1.7	67.0 - 67.99	
	1.6	66.0 - 66.99	
	1.5	65.0 - 65.99	
D+	1.4	64.0 - 64.99	Minimal learning and low quality performance throughout the course. Doubtful chance of success in subsequent courses.
	1.3	63.0 - 63.99	
	1.2	62.0 - 62.99	
D	1.1	61.0 - 61.99	Very minimal learning and very low quality performance in all aspects of the course. Highly doubtful chance of success in subsequent courses in field.
	1.0	60.0 - 60.99	
	0.9	59.0 - 59.99	
D-	0.8	58.0 - 58.99	Little evidence of learning. Poor performance in all aspects of the course. Almost totally unprepared for subsequent courses in field.
	0.7	57.0 - 57.99	
E	< 0.7	< 57.0	Complete absence of evidence of learning. Totally unprepared for subsequent courses in field.

Letter Grade and Quality of Performance Components Developed 1998 by Gerald Gillmore, Former Director of the UW Office of Educational Assessment

General grading information for the University of Washington is available at: <http://www.tacoma.uw.edu/uwt/enrollment-services/grading-policies>

University Policies

All students are expected to read the following stated University of Washington policies.

Students with Disabilities

To request academic accommodations due to a disability, please contact Disabled Student Services: Mattress Factory 253, 253-692-4522 (V/TTY). If you have a letter from DSS indicating that you have a disability which requires academic accommodations, please present the letter to me so we can discuss the accommodations you might need in the class. Academic accommodations due to disability will not be made unless the student has a letter from DSS specifying the type and nature of accommodations needed.

Academic Conduct

The following paragraphs discussing academic integrity, copyright and privacy outline matters governing academic conduct in the Institute of Technology and the University of Washington.

Academic Integrity:

The essence of academic life revolves around respect not only for the ideas of others, but also their rights to those ideas and their promulgation. It is therefore essential that all of us engaged in the life of the mind take the utmost care that the ideas and expressions of ideas of other people always be appropriately handled, and, where necessary, cited. For writing assignments, when ideas or materials of others are used, they must be cited. The format is not that important—as long as the source material can be located and the citation verified, it's OK. What is important is that the material be cited. In any situation, if you have a question, please feel free to ask. Such attention to ideas and acknowledgment of their sources is central not only to academic life, but life in general.

Please acquaint yourself with the University of Washington's resources on academic honesty:

<http://www.tacoma.uw.edu/enrollment-services/academic-honesty>.

Students are encouraged to take drafts of their writing assignments to the Writing Center for assistance with using citations ethically and effectively. Scheduling an appointment can be done online:

<http://uwttlc.mywconline.com/index.php>.

Copyright:

All of the expressions of ideas in this class that are fixed in any tangible medium such as digital and physical documents are protected by copyright law as embodied in title 17 of the United States Code. These expressions include the work product of both: (1) your student colleagues (e.g., any assignments published here in the course environment or statements committed to text in a discussion forum); and, (2) your instructors (e.g., the syllabus, assignments, reading lists, and lectures). Within the constraints of "fair use", you may copy these copyrighted expressions for your personal intellectual use in support of your education here in the Institute of Technology. Such fair use by you does not include further distribution by any means of copying, performance or presentation beyond the circle of your close acquaintances, student colleagues in this class and your family. If you have any questions regarding whether a use to which you wish to put one of these expressions violates the creator's copyright interests, please feel free to ask the instructor for guidance.

Privacy:

To support an academic environment of rigorous discussion and open expression of personal thoughts and feelings, we, as members of the academic community, must be committed to the inviolate right of privacy of our student and instructor colleagues. As a result, we must forego sharing personally identifiable information about any member of our community including information about the ideas they express, their families, life styles and their political and social affiliations. If you have any questions regarding whether a disclosure you wish to make regarding anyone in this course or in the UWT community violates that person's privacy interests, please feel free to ask the instructor for guidance.

Knowing violations of these principles of academic conduct, privacy or copyright may result in University disciplinary action under the Student Code of Conduct.

<http://www.tacoma.uw.edu/enrollment-services/academic-honesty>