

CSCI 391(CRN75242) / CSCI 591(CRN75244) Introduction to Cybersecurity

Brief course description:

Students will learn how modern computers try to secure themselves, how these systems can be vulnerable, and how to break into systems. It's a hip area for good reason.

Instructor:

Oliver Serang, Social Science 408.

Office hours

1. In person (Social Sciences 408): 3:30pm – 5pm on Tuesdays
2. On Zoom: 3:30pm – 5pm on Thursdays

Time and place of lecture:

Tue/Thu 2pm - 3:20pm SS362

Textbook: An Introduction to Cybersecurity, Serang (2019), available free:

<https://alg.cs.umt.edu/media/serang-cybersecurity.pdf>

Learning goals:

1. Understand the basics of cryptography and secure systems.
2. Understand the basis of vulnerabilities to these systems.
3. Understand how to penetrate such systems.

Learning outcomes:

Students will learn basic analysis of executables, permissions, x86-64 assembly, exploits (e.g., stack smashing, dangling pointer), defenses to standard exploits, keylogging, logic bombs, malware (and quines), cryptography, breaking hashes (and other penetration testing), online anonymity, and a brief history of how these topics arise and affect our modern world.

Attendance policy:

As a primarily lecture-/discussion-based course, attendance is highly encouraged, but is not part of the final grade; however, it is the responsibility of students to arrive at class on time in order to respect the instructor, their classmates, and to minimize disruptions.

Video access:

Due to COVID, lectures will be videoed and made available to students. This will prepare the class in case a spike of the illness moves the university to remote learning.

Homework:

Homework assignments are assigned to help reinforce understanding and prepare for quizzes / exam. Students are permitted and encouraged to review their answers together without fear of committing any academic misconduct; however, use of outside / online resources on assignments (unless explicitly permitted) will be seen as academic misconduct. It is important that you and your study group attempt assignments without outside help (see academic honesty and plagiarism section below).

Submit homework assignments through Moodle as instructed. Assignments received by email will not be graded (this is in order to keep the deadlines firm and to keep the process streamlined).

No late work will be accepted without providing a doctor's note. This is in an attempt to grade every student fairly against the same standard.

Exam:

The final exam will be given in person. To make a level playing field, students are responsible for having potentially helpful materials (e.g., notes, smartphone), put away during the final exam. Failure to do so or talking to other students during the exam will result in a 0 for that assignment.

The final exam will be held in room SS362 from 3:20pm – 5:20pm on Tuesday the 24th of November.

Grading:

Final grades will be curved at the instructor's discretion. The pre-curved grades will combine grades with the following weight:

50% homework

50% final exam

A- and above: 90% - 100%

B- and above: 80% - 90%

C- and above: 70% - 80%

D- and above: 60% - 70%

F: <60%

Grades will be curved at instructor discretion in a manner that will improve student letter grades.

Graduate increment:

The graduate version will occasionally have separate, more complex programming tasks that are more challenging and open ended. The graduate exam will also differ in a similar manner.

Academic honesty and plagiarism:

All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University. All students need to be familiar with the Student Conduct Code: (http://www.umt.edu/vpsa/policies/student_conduct.php). Take care not to talk or to take out / use cell phones, even briefly, on quizzes or your exam. Doing so, even briefly, will result in a 0 awarded for the task at hand.

Disability policy:

The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and Disability Services for Students. If you have a disability that adversely affects your academic performance, and you have not already registered with Disability Services, please contact Disability Services in Lommasson Center 154. Please provide the instructor notification of your disability in the first two weeks of the semester so that the best accommodation can be provided.