Syllabus

Course Info and Contact Information

- Course Name: CSE XXX, Internet Information Controls
- Instructor: Jed Crandall
- Email: jedimaestro@asu.edu
- Meeting Times: ???
- Meeting Location: ???
- Online Discussions: Piazza

Office Hours

TBA (in Piazza)

TAs

I'll announce the TA's name and office hours in Piazza.

Course Description

This course will cover advanced topics, relevant research, and current trends in the use of Network Intrusion Detection System (NIDS) systems on the Internet for information controls at the scale of entire nations.

Course Objectives

- Students will gain an understanding of how Network Intrusion Detection Systems (NIDSs) are applied by different nation states around the world for information controls.
- Students will gain an understanding of the social, ethical, and technical challenges inherent in measuring Internet censorship in different parts of the world.
- Students will gain an understanding of circumvention tools, such as Tor and VPNs, and the technical details of how they are implemented.

Course Learning Outcomes

- Students will compare in-path systems (e.g., Russia's TSPU or China's Great Cannon) and on-path systems (e.g., China's Great Firewall, Turk Telekom's Sandvine PacketLogic Devices, or NSA's QUANTUM INSERT), in terms of their capabilities and technical challenges. -Students will identify applicable NIDS evasion mechanisms for various NIDS implementations.
- Students will compare circumvention tools and their ability to provide security, privacy, anonymity, and stealth.

Enrollment Requirements

No prerequisite courses, but students are encouraged to know the basics of cybersecurity (e.g., symmetric and public key cryptography) and networking (e.g., IP routing) before taking the course. We will review all prerequisite knowledge, but briefly.

Grading Policies, Assignments, and Required Materials

Half of your grade will be reading papers and participating in in-class discussions. This portion will be self-graded but you need to attend class or have an excused absence to give yourself a grade. Participation points will add up to 300 points total. There will be also three substantial homeworks each totalling up to 100 points for 300 total. Your grade is 50% based on participation and 50% based on your homework, and will be your total points divided into the 600 possible. Grades are based on the following scale where x is the percentage: $97.0 <= x <= 100.0$ is an A+, $93.0 <= x < 97.0$ is an A, $90.0 <= x < 93.0$ is an A-, $87.0 <= x < 90.0$ is an B+, $83.0 <= x < 87.0$ is an B, $80.0 <= x < 83.0$ is an B-, $77.0 <= x < 80.0$ is an C+, $73.0 <= x < 77.0$ is an C, $70.0 <= x < 73.0$ is an C-, $60.0 <= x < 70.0$ is D, and $x < 60.0$ is an E.

There is no textbook for the course, neither required nor recommended. All materials used for the course lectures and assignments will be widely and publicly available and/or licensed open source.

Absence policies and the conditions under which assigned work can be made up

Everyone is entitled to the following course-specific late policy for every homework assignment, but cannot combine it with any other form of absence forgiveness (e.g., any of them from below): For every hour that an assignment is turned in late, you will lose 1% of the grade. Note that a little after four days late the assignment is worth 0%.

As an alternative to that policy, for every course you are entitled to: - Excused absences related to religious observances/practices that are in accord with ACD 304-04. - Excused absences related to university sanctioned events/activities that are in accord with ACD 304-02. - Excused absences related to missed class due to military line-of-duty activities that are in accord with ACD 304-11.

Instruction Style

The course will be a combination of lectures, in-class discussion of research papers, and homework assignments. Attendance is required.

For questions and answers regarding course materials and homework please use Piazza or come to office hours, unless there is some compelling reason to use email. Use email for course administrativia (requesting an extension, you need

a signature from me for some reason, etc.) Feel free to email me any time for anything, I won't shame you, but if you're asking questions about the homework or lectures you're much more likely to get a timely response in Piazza than via email.

All homeworks should be done in Linux, specifically MX Linux 19.4. If you use other Linux distros or other OSes you do so at your own risk, and with no guarantee of support from me. If you're familiar with Linux you can probably get the homeworks done in your distro of choice without too much trouble. I'll try to help but will need to prioritize the needs of students who are stuck and using MX Linux 19.4. If you attempt to do the homeworks in Mac OS, it's probably possible but it's going to be painful and I can't help you at all. The same goes for any BSD-based OS. If your OS of choice is another UNIX, like Solaris, I also can't help you with OS-specific questions and... seriously? If you attempt to do the homework in OSes that don't have a native UNIX-like shell, such as Windows, you will most likely fail. There are exceptions, but unless you've been competing in CtFs with your OS of choice for years and already have an environment set up for dealing with raw files, common file formats, packet captures, encodings, etc., please just use the provided Linux virtual machine or install MX Linux 19.4 in a virtual machine of your own.

You are responsible for your own file backups and time management. E.g., feel free email me, or send as a private post in Piazza, the day before something is due, "I worked on it all day and then my VM crashed and I lost my file!" I won't shame you, but that's not grounds for an extension and I'm not going to be able to do anything about it to make sure you submit your homework on time. I recommend keeping your code and other work for this course in a *private* repository that you periodically commit to.

Classroom Behavior

Please refrain from anything that will distract you or others from fully engaging in the class. Disruptive behavior will be dealt with according to university policies. While attendance and classroom behavior are not explicitly part of the grade, you are hereby notified that your attendance and classroom behavior are considered as part of your overall performance in the course to the extent allowed by university policies.

You may not record lectures without permission.

Textbook

As stated above, no textbook is required for this course.

Course Topics

XXX

Assessment

Students will be evaluated on their participation in reading and discussions, and their performance on homework assignments. There will not be any exams. Attendance is not recorded but will be reflected in your attendance grade.

Homework Due Dates

Homework due dates will be posted in advance on the class website and announced in class. All times will be Mountain Standard Time, i.e., Arizona time. Late submissions will be accepted with a 1% reduction of score per hour, as described above.

Academic Integrity

Students in this class must adhere to ASU's academic integrity policy, which can be found at https://provost.asu.edu/academic-integrity/policy. Students are responsible for reviewing this policy and understanding each of the areas in which academic dishonesty can occur. In addition, all engineering students are expected to adhere to both the ASU Academic Integrity Honor Code and and the Fulton Schools of Engineering Honor Code. All academic integrity violations will be reported to the Fulton Schools of Engineering Academic Integrity Office (AIO). The AIO maintains record of all violations and has access to academic integrity violations committed in all other ASU college/schools.

Plagiarism and Cheating Policies Specific to This Course

This course has a zero-tolerance policy: -Any violation of the academic integrity policy (detailed below) will lead to a failure on this course. -The violation will be reported to the AIO.

If you need more time to accomplish a homework assignment, please tell the instructor and ask for an extension. Extensions will be considered for circumstances that are/were beyond your control. Do not attempt plagiarism.

For this course, you are allowed to use code snippets that you find on the Internet as long as you specify clearly in the comment of your source code where the code snippets come from, and the source snippets existed before the assignment was assigned. You are not allowed to upload any part of your solution online or show it to other students. Using other students' answers or code, past or present, with or without a citation is seen as a violation of the academic integrity policy. You will not turn in your source code for most assignments, and maybe not any assignment. But if I suspect cheating I reserve the right to require you to come to my office and show me your source code to get full points. All assignments are graded automatically by graders with anti-cheating mechanisms built-in. Do not cheat – it is not worth risking your grade and your academic profile.

Security token

As part of the first homework, you will generate or receive a 128-bit token that will serve as a sort of student ID for the course. You are not to make this token public; share it with any of your classmates; share it with anybody other than the instructor, yourself, and the TAs; find out the token of any of your classmates; or in any way compromise the confidentiality policy that only you yourself and the instructor/TAs for the course should know your security token. If you violate this policy that will be considered cheating as per the policy above.

Sexual Discrimination

Title IX is a federal law that provides that no person be excluded on the basis of sex from participation in, be denied benefits of, or be subjected to discrimination under any education program or activity. Both Title IX and university policy make clear that sexual violence and harassment based on sex is prohibited. An individual who believes they have been subjected to sexual violence or harassed on the basis of sex can seek support, including counseling and academic support, from the university. If you or someone you know has been harassed on the basis of sex or sexually assaulted, you can find information and resources at https://sexualviolenceprevention.asu.edu/faqs. As a mandated reporter, I am obligated to report any information I become aware of regarding alleged acts of sexual discrimination, including sexual violence and dating violence. ASU Counseling Services, https://eoss.asu.edu/counseling is available if you wish to discuss any concerns confidentially and privately. ASU online students may access 360 Life Services, https://goto.asuonline.asu.edu/success/online-resources.html.

Copyright

All course content and materials, including lectures (Zoom recorded lectures included), are copyrighted materials. You may not share outside the class, upload to online websites not approved by the instructor, sell, or distribute course content or notes taken during the conduct of the course. See ACD 304-06, "Commercial Note Taking Services" and ABOR Policy 5-308 F.14 for more information.

You must refrain from uploading to any course shell, discussion board, or website used by the course instructor or other course forum, material that is not the student's original work, unless the students first comply with all applicable copyright laws; faculty members reserve the right to delete materials on the grounds of suspected copyright infringement.

Policy Against Threatening Behavior

Students, faculty, staff, and other individuals do not have an unqualified right of access to university grounds, property, or services. Interfering with the peaceful conduct of university-related business or activities or remaining on campus

grounds after a request to leave may be considered a crime. All incidents and allegations of violent or threatening conduct by an ASU student (whether on- or off-campus) must be reported to the ASU Police Department (ASU PD) and the Office of the Dean of Students.

Disability Accommodations

Suitable accommodations will be made for students having disabilities. Students needing accommodations must register with the ASU Disabilities Resource Center and provide documentation of that registration to the instructor. Students should communicate the need for an accommodation in sufficient time for it to be properly arranged. See ACD 304-08, Classroom and Testing Accommodations for Students with Disabilities.

Future Changes

Any information in this syllabus may be subject to change with reasonable advance notice.

Tentative Schedule

TBA