Syllabus

I Course Description

This course introduces principles and practices of computer and network security.

- Basic concepts: threat models, the security mindset
- Software security: defensive programming, memory protection, sandboxing, virtual machines, buffer overflows, malware
- Networks and network security: IP, TCP, routing, network protocols, web architecture, web attacks, firewalls, intrusion detection
- Applied cryptography: public and private key encryption, digital signatures and authentication, hash functions, secure channels
- Broader issues: privacy, anonymity, surveillance, legal issues, ethics, etc.

For a more in-depth lecture schedule, see the course webpage. This schedule is subject to change at any time.

II Prerequisites

Courses   You are expected to have taken and passed the following courses or equivalent:

- **CIS 160**: discrete math, particularly modular arithmetic.

- **CIS 240**: operating systems, computer memory management, etc.

We understand some NETS students are not required to take CIS 240. Nevertheless, CIS 240 is a prerequisite for this course and we assume you have mastered the necessary background to successfully complete the CIS 331 coursework.

Sufficient programming maturity   This course requires significant independent work. In addition to learning and understanding the concepts discussed in lecture, students must solve problems using software. These are not well-defined coding projects like those in introductory courses, and a working knowledge of Python is strongly recommended. Evaluation of this requirement is left to the discretion of the student.

III Assignments

There will be three types of assessment in this course. There will be 5 homework assignments to be completed individually and 4 projects to be done in pairs. There are two exams: a midterm and a final.

Late Days   You will have a budget of five late days (24-hour periods) over the course of the semester that you can use to turn assignments in late without penalty and without needing to ask for an extension. You may use a maximum of two late days per assignment. Late pair projects will be charged to both partners. Once your late days are used up, extensions will only be granted in extraordinary circumstances.

Late days can be used for homeworks and projects, but not exams. To use a late day, just turn in your assignment late. There is no need to notify the course staff.

If you have an extenuating circumstance, you must contact the course staff via Piazza before the assignment is due.

IV   Course Resources

Piazza   Piazza will be used for all course communication, such as homework announcements, project partner sign-up notifications, changes in office hours, assignment submission information, and other miscellaneous announcements. We do not recommend turning off Piazza email notifications.
You may use Piazza to interact with the course staff and your fellow students. Good items to post on Piazza include, but are not limited to:

- General homework questions and clarifications
- Questions or comments about grading
- Reqrade requests
- Requsts to change project partners
- Questions about due dates (hint: check the assignment handout first)
- Questions about accessing course materials or assignments
- Fun security news

Here are some things you should not ask on Piazza:

- What is the answer to <homework problem>?

  Instead, try *What are some resources I can use to learn about <homework concept>?*

- Is this the correct answer to <homework problem>?

- Why does this code not work? <200 lines of python>

  Instead, try *I'm having trouble with <error>. What are some common mistakes in this section, and do you have a hint for overcoming them?*

The course staff reserves the right to be cryptic and mysterious if giving you a straight answer will reveal more than we wish to tell you.

Canvas   Canvas will be used to submit assignments and receive grades. Canvas provides a "Total" grade column. Disregard this; it does not use the same weighting scheme that we will use to calculate final grades.

For group projects, you and your partner will have to manually add yourself to a group on Canvas, in order for you both to receive your grades. Please do this before you submit the assignment.

Textbook   There is no required textbook for this course. An optional textbook is Security Engineering by Ross Anderson. Additional (optional) readings will be posted on the course webpage.

V   Academic Honesty

We encourage you to discuss the problems and your general approach with other students in the class. However, the answers you turn in must be your own original work, and you must adhere to Penn's Code of Academic Integrity.

For more information, see the Office of Student Conduct.