ECE 404

INTRODUCTION TO COMPUTER SECURITY

School of Electrical and Computer Engineering
Purdue University
Spring 2020

Instructor: Avi Kak

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Office Hours: TuTh after class
(and by appointment at other times)

Class hours: TuTh 4:30 – 5:45

Classroom: Physics 112

Teaching Assistants

Constantine Roros

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Shayan Akbar

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Somrita Chattopadhyay

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Undergraduate Teaching Assistants (UTAs)

Tyler Baumgartner

Office:	EE209
Office Hours:	Mondays: 1:00 PM – 4:00 PM
	Tuesdays: 3:00 PM – 4:00 PM

Joven Garces

Office:	EE209
Office Hours:	Mondays: 4:00 PM – 6:00 PM
	Wednesdays: 4:00 PM – 6:00 PM

Katherine Grosch

Office:	EE 209 (Mon.) and EE 208 (Tue.)
Office Hours:	Mondays: 11:30 AM – 1:30 PM
	Tuesdays: 11:00 AM – 1:00 PM

Ziyu Guo

Office:	EE 209
Office Hours:	Tuesdays: 1:30 PM – 3:30 PM
	Fridays: 12:00 Noon – 2:00 PM

Seo Young (Ashley) Kim

Office:		EE 209
Office Hours:	Wednesdays:	12:00 Noon – 3:00 PM
	Thursdays:	10:00 AM – 11:00 AM

Karthick Shankar

Office:		EE 209
Office Hours:	Tuesdays:	11:00 AM – 1:30 PM
	Thursdays:	11:00 AM – 1:30 PM

Kennedy Faye Monaco

Office:		EE 209
Office Hours:	Mondays:	1:30 PM – 4:00 PM
	Wednesdays:	1:30 PM – 4:00 PM

Course Objective:

Beyond question, computer and network security has emerged as one of the most important subjects of study in modern times.

Even the minutest details of our lives now depend on computers and networks working with our trust that the information that is private to us will not fall in the hands of those with ill intent.

The two major components of computer and network security are cryptography and what is known as systems-oriented security.

For a good education in computer and network security, you have no choice but to learn them both.

For that reason, here is the goal of this class: To provide a balanced introduction to both cryptography and the systems-oriented issues.

In cryptography, we will cover the most important algorithms used today for data encryption and decryption. And in the systems-oriented issues we will cover in this course include Denial-of-Service attacks, DNS Cache Poisoning attacks, Buffer Overflow attacks, Dictionary attacks, attacks with viruses, worms, and Trojans, etc.

Homework and Exam Credit

You'll earn 50% of your credit from homework assignments (including programming assignments) and 50% from three exams.

There will be at least one homework assignment every week which could either be just theoretical in nature or could involve programming. In some weeks, you may get a small theoretical homework assignment in addition to the programming assignment.

Attendance Policy

1. Each class will begin with a 3-minute, 3-question quiz.
2. The purpose of this quiz is for me to see how comfortable you are in quickly articulating the major concepts covered in the previous lecture.
3. Although the quiz will not be graded, it will serve as a record of your attendance in class.
4. **If you miss more than three classes during the course of the semester, your grade may be lowered by one full letter.**

Homework Submission Policy

1. If your programming homework does not compile, do not turn it in.

2. You must turn in both hardcopy and electronic versions of your programming homework. The hardcopy (a PDF) should be in narrative form that explains what it is you have done, shows samples of input and output, and also includes your code. That is, your code goes both into a compilable file and into the PDF of what's been referred to as the hardcopy.

3. The instructions for turning in both the documents mentioned above will be posted on the course web page. These instructions will also be included in each homework description.

4. The electronic copy of your programming homework is due **before** the beginning of the class. The system will not let you make an electronic submission after the start of the class.

5. Actual grading of most programming homework assignments will take place through automatic testing of the electronic submission of your code and by examining the hardcopy PDF.

Exams

There will be three midterm exams. (There will be no final exam.) Each exam will carry the same weight in the final evaluation. The exams have been scheduled for the following dates and times:

Exam dates		*Exam time*	*Location*
Exam 1:	Thursday February 13	8 pm	LILY G126, SMTH 108
Exam 2:	Tuesday March 10	8 pm	LILY G126, SMTH 108
Exam 3:	Tuesday April 21	8 pm	EE 129

Additional Information:

1. Your course grade will be determined from the total points that you obtain from homework assignments and exams, and will be based on a combination of relative and absolute scaling. You determine your own grade by your homework and exam performance.

2. There will be no extra credit projects.

3. If you do not show up for an exam you will receive a zero, unless you obtain prior authorization from the TA to be absent from the

exam. (The authorization MUST come from the TA. Asking your instructor for the authorization to be absent does not count.)

4. If a medical or some other emergency keeps you away from an exam, you must notify the TA within 8 hours after the exam. NO PUSH notes will be accepted. Absolutely no late exams will be given after the exams are handed back in class.

5. Course exams will be given in the evenings. Each exam will cover approximately one third of the course material. (Exams will not be cumulative, but you will be expected to know all the material up to an exam in order to be successful in that exam.)

6. You are responsible for all information given in class verbally and/or in writing. All information about the course (including but not limited to exam dates, office hours, and course schedule) may be superseded by the information given in class at any time.

7. **Cooperative efforts at understanding the material and the assignments of the course are encouraged. However, what you finally present for any given homework must be done individually.** Submitting any work that is not a student's own work is considered cheating. If you cheat, the Dean of Students will be notified.

8. You may ask to have an assignment or exam re-graded, the result of which may be an increase or a decrease in your grade. To have an assignment or a test re-graded, you must speak with the TA

within **two days** after receiving the graded material.

9. The course web site:

   `https://engineering.purdue.edu/ece404/`

   Note that, in general, homework assignments and their solutions will NOT be posted at the course web site. However, useful information, including a solution, may be posted on the web site for homework assignments that are particularly challenging.