• **Course Overview:** This course is an advanced graduate (and for this semester, undergrad also) course that will cover a diverse set of topics related to information and network security. The class will cover a mix of mathematics and programming, covering aspects of security from theory to practice. This course is primarily aimed at giving graduate students the resources needed to follow the state of the art in security research. This class will involve a research component (particularly for graduate students), and advanced levels of independent study is required.

• **Course Specifics:**
  - Place and Time: MTh 12:00-1:20PM, at SEC 220.
  - Instructor: Wade Trappe. Phone: 732-932-6857 ext 644. Office: CORE 523, or WINLAB. Email: trappe@winlab.rutgers.edu. Office Hours are M 11:00-12:00pm (Core), Th 3pm-4pm (WINLAB).
  - TA: None.

• **Handouts and Materials:** All course related materials will be available at the course website: www.winlab.rutgers.edu/~trappe/AdvSec_F11.html. Homework assignments will be posted on this website and announced in class.

• **Prerequisites:** This class will rely heavily upon mathematics and computer programming skills. Students should have received a B+ or higher in either Stochastic Processes, Comm Nets I, Computer Networks I (CS), Algorithms, or Digital Communications, or should have my permission to take this class. Undergraduate students should have a background in probability and discrete mathematics. Students should be willing to program, and comfortable with learning new programming languages. Students with low GPAs must understand the risks associated with taking this course, it will be rough and tough.


• **Grading:** The grade for the class will be based upon regular quizzes, programming projects, and a term project.
  - Homework: (0%) There will be regular homework assignments. The homework assignments will not be due. Instead, students are expected to work on the homework independently. This is an advanced class– students are expected to figure out the solutions for themselves.
  - Pre-Req Quiz: (5%) There will be a mandatory (ABET-related) pre-req quiz administered to both graduate and undergraduate students. It will cover basic discrete mathematics. Graduate students should study so they don’t look bad.
  - Quizzes: (45%) There will be 5 short 20 minute quizzes, once a week starting the third week. These quizzes will typically have one or two short/quick problems on security, ranging from math to writing pseudocode for something, to discussing the merits of a scheme. After 5 quizzes, the pain will end and I will stop giving quizzes.
  - Small Computer Project: (20% total) There will be one small programming assignment sometime during the course of the semester.
  - Term Report/Project: (20%) Students will break up into teams of two or three members and will choose a research topic of their interest (related to security) with which to investigate, implement, and research. Graduate students are expected to produce (by the end of the semester) new research and an accompanying report suitable for submission to an IEEE/ACM/IACR conference/journal. Undergraduate students will research a topic and write a report (such as a literature review), the expectation is that this report will not necessarily be at the level for submission to a conference. At the end of the semester, the teams will present their projects to other teams!
  - Evaluate and Trash: (10%) All students will critique one or two of the projects submitted by graduate students and write a short 1-page report critiquing the projects.