

16:332:507 - Security Engineering

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Overview

General Information

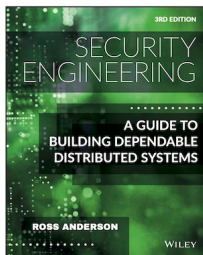
Instructor: Demetrios Lambropoulos

Email: dpl60@soe.rutgers.edu

Instructor Office Hours: Will be held weekly Tuesdays from x to x in EE-216 or with prior appointments.

Textbook

Ross Anderson, Security Engineering, **2nd Edition**



Select chapters available at:

<https://www.cl.cam.ac.uk/~rja14/book.html>

Second edition is freely available online

Course Information

Materials

Online Material: available on our Canvas site

- Class notes
- Reading Lists

Online Deliverables:

- Homework Assignment
- Presentation Materials
- Final Paper

Weekly Readings

Every week, there will be either a corresponding book chapter or other publications available online, or both.

It is possible there is no additional readings.

All selected reading material will part of quizzes and the midterm

You should start reading material from first week.

Quizzes

Quizzes: There will be two quizzes throughout the course

- **Quiz 1** - 02/05/2024
- **Quiz 2** - 04/11/2024

Exams

Exams: There will be one midterm exam

- **Midterm Exam - 03/07/2024**

Final Project Deadlines

The report must be written in LaTeX in IEEE Conference format.
Minimum length: seven pages (including references).

Proposal Due - 02/09/2024

Progress Report Due - 03/01/2024

Results Report Due - 04/05/2024

Final Report Due - 04/26/2024

Course Grading

- 30% - Final Project
- 30% - Miterm
- 20% - Quizzes
- 20% - Homeworks/projects

Policies

Class Attendance Policy

Lectures will be given in person and will not be recorded

Attendance is strongly recommended to achieve the objectives of the course

It is your responsibility to learn all the materials covered in class (written or orally transmitted), which can appear in examinations

General Policies

Attendance at tests is mandatory. Absence from an examination will not be excused except in cases of an illness or other emergency

Unexcused absence from an examination will result in a grade of zero. It is the student's responsibility to see the instructor as soon as possible regarding an excused absence

All make-up work must be scheduled no later than the last day of classes in the semester.

Students are responsible for all materials covered in lectures, readings, as well as announcements for homework assignments, assignment due dates, and test dates.

General Policies

All exams must be taken at the scheduled time unless a previous arrangement has been made with the instructor (with one-week advanced notice), or there is a valid excuse acceptable according to the University Policy.

Absence from quizzes or tests without a valid reason or prior arrangement will result in getting a zero for the missed test.

Grading Disputes

Any questions or grading disputes for homework, quizzes, and exams need to be resolved within two weeks from grade posting

No grade dispute will be accepted after this time window

Academic Integrity at Rutgers

The principles of academic integrity require that a student:

- Make sure that all work submitted in a course, academic research, or other activity is the student's own and created without the aid of impermissible technologies, materials, or collaborations
- Treat all other students ethically, respecting their integrity and right to pursue their educational goals without interference. This principle requires that a student neither facilitate academic dishonesty by others nor obstruct their academic progress
- Uphold the ethical standards and professional code of conduct in the field for which the student is preparing
- <http://newbrunswick.rutgers.edu/chancellor-provost/academic-integrity-students>

Topics

Topics Covered

- **UNIT 01** - What is Security Engineering?
 - How security engineering overlaps and is distinct from other fields of engineering

- **UNIT 02** - Security Protocols
 - Fundamentals
 - Design and Analysis
 - Modern Protocols
 - Human aspects and ceremonies in protocols.

Topics Covered

- **UNIT 03** - Usability and Psychology
 - Usable Security and Privacy
 - Attacks based on psychology
 - Insights from psychology research
 - System issues

- **UNIT 04** - Mobile Device Security
 - Mobile platform security
 - Mobile app distribution and security
 - Mobile OS security
 - Privacy issues with applications

Topics Covered

- **UNIT 05** - Password Authentication
 - Difficulties with reliable password entry
 - Difficulties with remembering passwords
 - Password research
 - Measuring password security

- **UNIT 06** - Access Control
 - Groups and Roles
 - Access Control Lists
 - Sandboxing Virtualization

Topics Covered

- **UNIT 07** - Biometric Systems and Alt Topics
 - Handwritten signatures
 - Face recognition
 - Fingerprints
 - Voice Recognition

- **UNIT 08** - Evaluating Security
 - Assurance
 - Economic Incentives
 - Evaluation

- **UNIT 09** - Recent Topics in Security Engineering

Learning objectives

Outcomes

- An ability to analyze security and privacy of systems
- An ability to conduct user-centered design for security engineering
- An ability to understand programming constraints with systems security.
- An understanding of limitations and advantages of security protocols, biometric systems, password authentication and various alternative systems.