

EECE 457 - Security Engineering

Catalog Description:

Introduction to security engineering, systemic analysis and common design principles. Cryptography, multilevel security, system evaluation, real-world vulnerabilities and attacks.

Prerequisite(s):

EECE 252, familiarity with C or C++, or similar programming language.

Textbook(s) and/or Other Required Material:

Security Engineering, by Ross Anderson.

Course Objectives: After completing this course, the student should have the ability to

1. Describe the stages of analysis of and solution to a security problem.
2. Describe common security principles (e.g., Kerckhoffs's Criterion) and cite examples of these principles being followed or violated in the real world.
3. Identify rudimentary flaws in bad security protocols.
4. Design a simple protocol aware of common mistakes.
5. Explain how buffer overrun and SQL injection attacks work, and write code which performs an overrun.
6. Explain multilevel and multilateral security policy models.

Course Topics:

1. Modeling of threats, attacks and vulnerabilities
2. Security design principles
3. Cryptography and communication protocols
4. Multilevel and multilateral security
5. Buffer overrun and injection attacks
6. System design and analysis

Grading

Assignments in this course consist of group projects and individual programming assignments. On individual assignments, students are expected to work alone and not share code. The overall distribution of grading is: 60% assignments, 20% midterm exam, and 20% final paper/project.

A note on influenza

In order to prevent the spread of the H1N1 Flu Virus, please do not attend lecture or lab if you have a fever, body aches, cough, and/or sore throat- even if you don't think it's the flu. The university recommends that you remain at home or in your room and follow instructions from the University's Health Services (<http://www2.binghamton.edu/health/>). Please notify your instructor of your absence as soon as reasonably possible. Every effort will be made to accommodate make-up work. Excluding scheduled exams, you will not be asked to validate your illness with a note from a medical professional. It is considered a violation of the academic honesty code if you abuse this policy for non-medical reasons.

Binghamton University maintains an updated H1N1 webpage at <http://www2.binghamton.edu/news/updates/index.html>

For recommendations on what to do if you get sick, see the CDC site at

<http://www.cdc.gov/h1n1flu/sick.htm>

Academic Honesty

All students must adhere to the Student Academic Honesty Code of the University and the Watson School (links below). The Department of Electrical and Computer Engineering has adopted a standard policy to enforce these codes for violations involving course work. Category I violations result in a grade of 0 for the graded work plus a one letter course grade reduction. A *Report of Category I Academic Dishonesty* form is filed with the Provost's Office; if a prior report is already on file, the offense is automatically elevated to Category II. Category II violations result in at least a failing grade for the course plus any additional penalties determined by the Watson Academic Integrity Committee.

University Academic Honesty Code:

http://bulletin.binghamton.edu/program.asp?program_id=826

Watson School Academic Honesty Code:

http://www.binghamton.edu/watson/Watson_Academic_Honesty_Policy.pdf

ECE Department Academic Honesty Code Enforcement Policy

http://www.ece.binghamton.edu/documents/Academic_Honesty_Policy.pdf

This course is also offered under the articulation agreement between Binghamton University and SUNYIT. It is available to qualified students at Binghamton University via the distance learning system Enginet.