

Syllabus

1. Course Staff and Office Hours

Instructor: Carlos Fernando Gamboa
carlos.gamboa@stonybrook.edu
Office Hours: Mondays, Wednesdays, 5:00pm to 6:00pm
Other hours by appointment

Office hours and locations may change. Please check Blackboard for most up-to-date information.

Carlos Gamboa is inviting you to a scheduled Zoom meeting.

Topic: -ESE 360.01 Network Security Engineering - Spring 2022

Time: Feb 1, 2022 05:00 PM Eastern Time (US and Canada)

Every week on Tue, Thu, 1 occurrence(s)

Feb 1, 2022 05:00 PM

Please download and import the following iCalendar (.ics) files to your calendar system.

Weekly:

https://stonybrook.zoom.us/meeting/tJcoduupqTopE9Fs2rDEImG2Exv_LbQX4Lwb/ics?icsToken=98tyKuCrqzooG9OUSxCCRRowqGYj4a-vwtn5ej_p7j033JwV6bySkE_pUDZ59IeCE

Join Zoom Meeting

<https://stonybrook.zoom.us/j/93512171395>

2. Course Description

An introduction to computer network and telecommunication network security engineering. Special emphasis on building security into hardware and hardware working with software. Topics include encryption, public key cryptography, authentication, intrusion detection, digital rights management, firewalls, trusted computing, encrypted computing, intruders and viruses. Not for credit in addition to CSE 408.

Prerequisites: ESE/CSE 346 or CSE/ISE 310

3. Textbook

Cryptography Engineering: Design Principles and Practical Applications. N. Ferguson, B. Schneier, T. Kohno. Wiley; 1 edition

4. Course Learning Objective

Upon completion of the course, students will have a broad overview of key aspects involved in computer networks security. Students will gain a better understanding of the network technology in the context of security while a mastering technology's fundamental concepts.

5. Student Learning Outcomes

Student Outcomes		% contribution
1	an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.	30%
3	an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.	10%
3	an ability to communicate effectively with a range of audiences.	5%
4	an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgements, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.	10%
5	an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.	
6	an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgement to draw conclusions.	25%
7	an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.	20%

6. Schedule

Date	#	Topics	Text	Project
Tue 01/25	1	Introduction to network topology Review computer network technologies Review OSI layered protocol	notes	
Tue 2/1	2	Introduction to Cryptography	2.1–2.11	
Tue 2/8	3	Block Cipher and Block Cipher Modes	3.1–3.3, 4.1-4.5	
Tue 2/15	4	Hash Functions and Message Authentication Codes	5.1–5.5 6.1-6.6	
Tue 3/1	5	Communication Security	notes	
Tue 3/8	6	Exam 1 (Classes: 1–4)		
Tue 3/22	7	The secure channel	7.1-7.5	1 st submission

			Implementation issues Met with each group to advice and give instruction of project's derivable.		
Tue	3/29	8	Implementing cryptographic systems (issues) Public-key cryptography	8.1–8.5, note:	
Tue	4/5	9	Introduction to cryptographic protocols	13.1-13.5	
Tue	4/12	10	Storing secret information	21.1-21.10	
Tue	4/19	11	Exam 2 (Classes: 5–9)		
Tue	4/26	12	Implementation of the Public-Key Infrastructu Project group presentations	14.1–14.5	Presentations
Tue	5/3	13	Society and networks security Project group presentations	notes	Presentations Report submission

7. Assignments

7.1. Project

Student will select a topic from a poll proposed and will write a report considering security related aspects of the topic selected. The report will need to be submitted following the IEEE guidelines,

http://www.ieee.org/publications_standards/publications/authors/author_templates.html

In addition, the student will present project summary to the class.

8. Grading

Your grade will be based on:

Project	40%
Midterm #1	30%
Midterm #2	30%

9. Academic Honesty

Any academic dishonesty on a written homework or lab will result in a zero grade for the assignment for all parties involved.

All exam work must be entirely your own with no collaboration or outside materials/information. Any academic dishonesty on the midterm exams or the final exam will result in failing the course. The case will be submitted to the College of Engineering's Committee on Academic Standing and Appeals.

11. Electronic Communication Statement

Email and especially email sent via Blackboard (<http://blackboard.stonybrook.edu>) is one of the ways the faculty officially communicates with you for this course. It is your responsibility to make sure that you read your email in your official University email account. For most students that is

Google Apps for Education (<http://www.stonybrook.edu/mycloud>), but you may verify your official Electronic Post Office (EPO) address at <http://it.stonybrook.edu/help/kb/checking-or-changing-your-mail-forwarding-address-in-the-epo>.

If you choose to forward your official University email to another off-campus account, faculty are not responsible for any undeliverable messages to your alternative personal accounts. You can set up Google Mail forwarding using these DoIT-provided instructions found at <http://it.stonybrook.edu/help/kb/setting-up-mail-forwarding-in-google-mail>.

If you need technical assistance, please contact Client Support at (631) 632-9800 or supportteam@stonybrook.edu.

12. Student Accessibility Support Statement

If you have a physical, psychological, medical, or learning disability that may impact your course work, please contact the Student Accessibility Support Center, 128 ECC Building, (631) 632-6748, or at sasc@Stonybrook.edu. They will determine with you what accommodations are necessary and appropriate. All information and documentation is confidential.

13. Academic Integrity Statement

Each student must pursue their academic goals honestly and be personally accountable for all submitted work. Representing another person's work as your own is always wrong. Faculty is required to report any suspected instances of academic dishonesty to the Academic Judiciary. Faculty in the Health Sciences Center (School of Health Technology & Management, Nursing, Social Welfare, Dental Medicine) and School of Medicine are required to follow their school-specific procedures. For more comprehensive information on academic integrity, including categories of academic dishonesty please refer to the academic judiciary website at http://www.stonybrook.edu/commcms/academic_integrity/index.html

14. Critical Incident Management Statement

Stony Brook University expects students to respect the rights, privileges, and property of other people. Faculty are required to report to the Office of University Community Standards any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, or inhibits students' ability to learn. Faculty in the HSC Schools and the School of Medicine are required to follow their school-specific procedures. Further information about most academic matters can be found in the Undergraduate Bulletin, the Undergraduate Class Schedule, and the Faculty-Employee Handbook.