

CIS 9590: Network and Information Security

Instructor: Dr. James Du,

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Lecture Time: 5:30 - 8pm Monday

Location: 102 RITTER HALL

Credits: 3

CRN: 069220

Prerequisite: A course in Computer Networks equivalent to CIS 4319 or CIS 4329

Educational Objectives: This course introduces basic knowledge of cryptography and its application to network and information security.

Rationale: With today's increasing number of cyber attacks, cyber security becomes a critical research issue and practical concern. Network and information security is an important topic for computer and information science students.

Textbook:

William Stallings, Network Security Essentials: Applications and Standards, 3/E, 2007, Prentice-Hall. ISBN-10: 0132380331; ISBN-13: 9780132380331

Grading:

- 5% Homework
- 15% In-Class Exercises
- 30% Technical Paper Reading and Presentation
- 50% Final Project

Lecture Topics:

I. Introduction to Computer Networks

- LAN, WAN, Wireless Networks, and Network Reference Models
- IPv4, IPv6, ICMP, and DNS

II. Introduction to Cryptography

- Symmetric Encryption and Message Confidentiality
- Public Key Cryptography
- Authentication

III. Network and Information Security

- Web Security
- Intrusion Detection
- Malicious Software
- Firewalls

Technical Paper Reading and Presentation

Each student is required to read a recent technical paper in the area of network and information security. The instructor will provide a list of papers for the students to select. The papers are selected from recent top security conferences and journals. The purpose of the Technical Paper Reading is to let students know the up-to-date research frontier in security area. Each student needs to prepare slides and then talks about the main contents of the paper.

Final Project

Each student is required do a final project in the area of network and information security. Each student should find some possible topics and then discuss with the instructor to finalize the topic. The final project includes proposing a new research idea, designing a scheme based on the idea, implementing the scheme in software, and evaluating the performance of the software.

Course Policy

- Students are expected to attend all classes. If a class is missed for any reason, the student is responsible for finding out the material covered, any assignment and handouts given, and any other announcements made in the class (e.g., exam date).
- Homework and other assignments should be submitted at the beginning of the class on the corresponding due date. Late work will be penalized at 5% of its full credit per day. You may discuss homework assignments with classmates but all solutions must be original and individually prepared.
- Cheating in an assignment (such as homework and project) may result in a grade of F in the course.