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# CS458/CS558: Introduction to Computer Security

Spring 2012

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## Course Information

### Class Time and Place:

Tue. and Thur. 8:30am -- 9:55am, SL210 (Science Library)

### Instructor:

Ping Yang  
Office: T6, Engineering building  
Email: [pyang@binghamton.edu](mailto:pyang@binghamton.edu)  
Office Hours: Thur. 8am - 8:25am Fri. 10:30am-11:30am

### Teaching Assistant:

Ruiqi Luo  
Office: N1, Engineering building  
Email: [rluo1@binghamton.edu](mailto:rluo1@binghamton.edu)  
Office Hours: Mon. Wed. Fri. noon - 1pm

## Course Objective

This course provides a broad introduction to network, computer and information security. Topics covered by this course includes:

- Introduction to network and socket programming
- Cryptography
  - Symmetric encryption (substitution ciphers, transposition ciphers, DES, RC4)
  - Public-key encryption (RSA)

- Key distribution
- Hash function (SHA512) and digital signature
- Authentication protocols
- Email security (email spoofing, email phishing, PGP)
- Web security (SSL/TLS)
- Online banking security
- Password management and intrusion detection
- Malicious software (virus, worm, rootkit, backdoor, trojan horse),
- Firewalls
- Buffer overflow attacks
- SQL injection attacks
- Access control (discretionary access control, mandatory access control, role-based access control, database access control)
- Virtual machine security
- Memory sniffing attack
- Secure electronic transaction
- Security issues in cloud computing

**Text Book:**

William Stallings *Cryptography and Network Security Principles and Practice*, Fourth/Fifth Edition. ISBN-10:0-13-187316-2, ISBN-13: 978-0-13-187316-2

**Course Software:**

gcc, g++, Java, and Openssl are available on bingsuns.binghamton.edu.

**Slides:**

Course slides will be available on the [blackboard](#)

**Assignments:**

All assignments will be posted on the [blackboard](#). Programming assignments will be done individually. Written assignments will be done by a group of two students. No assignment will be accepted after 24 hours from the deadline. Late assignments will be penalized 10%.

**Online Resources**

- [C FAQ](#)
- [UNIX and C tutorial](#)
- [C Makefile](#)
- [Thinking in Java](#)
- [Java Makefile](#)
- [Open SSL](#)

- [Java SE Security](#)
- [Online TCP/IP Tutorial](#)
- [Rootkit](#)
- C Socket Programming[\[1\]](#), [\[2\]](#)
- Java Socket Programming[socket1](#) [Socket2](#) [Socket3](#) [Socket4](#) [Socket5](#)

## Grading:

**Assignments: 40%**

**Course Project: 18%**

**Exam 1: 18%**

**Exam 2: 24%**

Final grade will be curved over the entire class. The TA will grade assignments, quizzes, and programming projects. If you have questions about the grading of assignments and quizzes, please first contact the TA. This is used to ensure consistent grading. If the issue has not been resolved by the TA, then talk to the instructor, preferably during office hours. Questions regarding exams, and final grades should be addressed to the instructor.

## Academic Honesty:

All students should follow [Student Academic Honesty Code](#) (**if you have not already read it, please read it carefully**). All forms of cheating will be treated with utmost seriousness. You may discuss the problems with other students, however, you must write your OWN codes and solutions. Discussing solutions to the problem is NOT acceptable. Copying an assignment from another student or allowing another student to copy your work may lead to an automatic **F** for this course. You need ensure that your code and documentation are protected and not accessible to other students. Use **chmod 700** command to change the permissions of your working directories before you start working on the assignments. If you have any questions about whether an act of collaboration may be treated as academic dishonesty, please consult the instructor before you collaborate.

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.