

# CSI 5460: Information Security (4 credits)

Winter 2018

## Course Abstract

**Prerequisites:** CSE/CIT 247 or equivalent, C/C++ and/or Java.

**Contents:** Introduction to cryptography and its application to network and operating system security; secret key and public key cryptographic algorithms; hash functions; authentication; email security; web security; IP security; wireless security; Firewalls and intrusion detection techniques; security threats and countermeasures; and legal and ethical issues.

## Course Objectives

- Learn fundamentals of cryptography.
- Understand information security threats and countermeasures.
- Acquire background for supporting e-commerce, e-government, e-critical and e-education.
- Gain hands-on experience with programming techniques for cryptography.
- Obtain background for original research in information security.

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**Instructor:** Dr. [Huirong Fu](#)

Office hours: By appointment and walk-ins welcomed.

Office phone: (248) 370-4456

Office: EC 528

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**Class location:** EC 554

**Day and time:** Saturdays, 9:00 am - 12:20 pm

**Required texts:** William Stallings, *Network Security Essentials: Applications and Standards*, Prentice-Hall. ISBN 0-13-035128-8.

**Reference texts:** Charlie Kaufman, Radia Perlman, and Mike Speciner, *Network*

*Security - Private Communication in a Public World*, Prentice Hall, 1995. ISBN 0-13-061466-1.

Charles P. Peleeger, *Security in Computing*, Prentice-Hall. ISBN 0-13-337486-6.

Ross Anderson, *Security Engineering: A Guidance to Building Dependable Distributed Systems*, John Wiley & Sons Inc. ISBN 0-471-38922-6.

Dorothy E. Denning, *Information Warfare and Security*, Addison Wesley. ISBN 0201433036.

Edward Amoroso, *Fundamentals of Computer Security Technology*, Prentice-Hall, 1994. ISBN 0-13-108929-3.

Bruce Schneier, *Applied Cryptography* (2nd ed.), John Wiley, 1996. ISBN 0-471-11709-9.

William R. Cheswick and Steven M. Bellovin, *Firewalls and Internet Security*, Addison-Wesley, 1994. ISBN 0-201-63357-4.

W. Richard Stevens, *TCP/IP Illustrated, Volume 1*, Addison-Wesley, 1994. ISBN 0-201-63346-9 (v.1).

J. Kurose and K. Ross, *Computer Networking, a Top Down Approach Featuring the Internet*, Addison-Wesley, 2005. ISBN 0-321-22735-2.

A. Gupta and S. Laliberte, *Defend I.T.: Security by Example*, Addison-Wesley, 2004. ISBN 0-321-19767-4.

**Assignments:** Homework assignments, in-class discussions and assignments, each including paper-and-pencil questions and/or programming problems.

**Project(s):** There will be a term project. You will do independent research in small groups (e.g., teams of 2--3). Projects may cover any topic of interest in information security, interpreted broadly (it need not be a topic discussed in class); ties with current research are encouraged. A conference-style or NSF proposal-style report and a project presentation on your results will be due at the end of the semester.

You are encouraged to start thinking of topics of interest early. Be ambitious! I expect that the best papers will probably lead to publication (with some extra work).

**More details can be found at Moodle.**

**Moodle:** Moodle is the tool to be used for our class web page. This website will include notes and schedules (including exam dates) for our course. Assignments will be available for download from this site. Please check this site often for updates. Use your OU email account name and password to login to the system.

The address is <https://moodle.oakland.edu/>

**Grading:** Assignments, In-class Quizzes, Discussions and Assignments, and Labs 60%, Project 40%. No final exam.

You may discuss homework assignments with classmates but all solutions must be original and individually prepared. **Homework assignments should be submitted by their due date. No late assignments will be accepted.**

**Logistics:** Outside of class and office hours, questions regarding assignments, course material, etc. send me emails. Please feel free to make suggestions, complaints, etc., at any time including making comments anonymously.

**Special needs:** Any students with disabilities or other special needs, who need special accommodations in this course are invited to share these concerns or requests with the instructor as soon as possible.

**Rules:** The “Student Code of Conduct” and “Academic Conduct Regulations” can be found on the OU website at <https://www.oakland.edu/deanofstudents/conduct-regulations/>. Students suspected of cheating will be referred to the Academic Conduct Committee according to the “Academic Conduct Policy”. Any student found guilty of cheating by that committee will receive a 0.0 grade in the course.

In particular, no student may represent or imply that the work of another person is her or his own.

As a computer user, you are expected to behave in responsible ways. You should always follow computer usage policies (of your company, your department, or Internet Service Provider, etc). The discussion in this class does not give your permission to violate computer usage policies.