

Summer 2013

CEG 4422/6422-01: Secure Computing Practices

Bin Wang

Wright State University - Main Campus, bin.wang@wright.edu

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Department of Computer Science and Engineering
Wright State University

CEG4422/6422 Secure Computing Practices

SYLLABUS

Summer 2013

Drop dates: 5/31 (in-person), 6/2 (online) no grade; 6/28 (in-person), 6/30 (online) with a W
Summer term: May 6 – July 24

Time/Place	Section 1: 9:50-11:30am, M, W Russ 154
Instructor	Dr. Bin Wang, Professor, 491 Joshi Research Center Tel: (937) 775-5115, E-mail: <i>send email via Pilot</i> Office hours: 9:10-9:40am, 11:30am-12 M, W, or walk-in
Prerequisites	CEG 4420/6420 Host Computer Security or equivalent, can be waived, depending on preparedness
Textbooks	<i>Required:</i> Charles Pfleeger, Shari Lawrence Pfleeger, Security in Computing, 4th Edition, Prentice Hall, 2007. <i>References:</i> Ross Anderson, <i>Security Engineering: A Guide to Building Dependable Distributed Systems</i> , Wiley, 2008. Mark Stamp, <i>Information Security: principles and practices</i> , Wiley, 2011. Matt Bishop, <i>Computer Security: Art and Science</i> , Addison-Wesley, 2003. Charles P. Pfleeger, Shari Lawrence Pfleeger, <i>Analyzing Computer Security</i> , Prentice Hall, 2012. Michael Goodrich, Roberto Tamassia, <i>Introduction to Computer Security</i> , Addison-Wesley, 2011. Michael Sikorski and Andrew Honig, <i>Practical Malware Analysis: The Hands-On Guide to Dissecting Malicious Software</i> , No Starch Press, 2012. Ed Skoudis, Tom Liston, <i>Counter Hack Reloaded: A Step-by-Step Guide to Computer Attacks and Effective Defenses</i> , Prentice Hall, 2006. John Aycock, <i>Computer Viruses and Malware</i> , Springer, 2006.
Webpage	http://pilot.wright.edu
News Group	Check daily Pilot for announcements, assignments, homework, questions and answers.
Course Objectives	This course is designed to raise the security-awareness as a computer user and designer. Describe techniques, and the use of cryptography, in enhancing security and privacy that a computer professional ought to know. The contents include Basics and Use of cryptography. Digital certificates. Authentication. Confidentiality of data in transit and in storage. File integrity, MD5, SHA1. Hidden scripts in DOC and PDF files. Secure deletion of files.

WEP, WPA2. VPN. Covert channels. Steganography. Privacy. Sandboxes. Zombie Machines, DDoS. Man-in-the-Middle Attacks etc.

Students should be able to (including, but not limited):

- Deploy cryptography based solutions such as certificates, MD5, etc.
- Build sandboxes containing the effects of suspect software systems.
- Verify/improve the levels of wireless LAN security.

Students' Responsibilities

You are expected to:

- 1) read assigned materials (papers, sections of books).
- 2) attend classes on a regular and timely basis. Regular class attendance is important and is essential to success in the course. You are responsible for all contents, handouts, and announcements distributed/made in class.
- 3) complete and turn in your assignments timely. You are expected to write your own programs. **Do not** copy from or give your work to others, and **do not** make it possible for others to copy any portions of your work. Violators will receive a zero credit on the assignment.
- 4) be present for exams/presentations at the scheduled times. If there is a catastrophic event that prevents you from taking an exam/presentation, please contact the instructor as soon as possible.
- 5) consult with the instructor if you have questions regarding course contents, lectures, handouts, or other problems.

Course Evaluation

You will receive a final course grade comprised of the weighted scores earned on all required course assignments and exams.

Methods:	% of final grade
1. Participation(show up, in class participation/discussion, etc):	5%
2. Labs (about 5 for undergraduate 6 for graduate):	40%
3. Presentation:	5%
4. Middle term exam:	20% (in class, time TBD)
5. Final exam:	30% (July/24, Wed, 9:50-11:30am)

Total	100%

Grading scale:

4422		6422
90-100	A	93-100
80-89.9	B	83-92.9
70-79.9	C	73-82.9
60-69.9	D	63-72.9
Below 60	F	<63

Undergraduates and graduates will be graded separately. Graduate students will have one extra lab assignment.

Re-grading policy: If you have questions about the way an assignment or exam is graded, you must detail the rationale for re-grading.

Late Submission of Assignments

You are encouraged to discuss assignments with classmates but all solutions must be original and individually prepared.

You will lose 10% of the total points for an assignment for each 24-hour period (or fraction of a 24 hour period) the assignment is late. Late assignments will be accepted up to 4 days after the due date as specified in the assignment handout. Late penalty is accrued on weekends just as during the week. Partial credits will be given to students who turn in partially completed assignments.

Special considerations will be given for students who have a medical excuse for late submission (written proof of illness is required). These considerations may extend to medical emergencies involving children or other family members. Such consideration is at the discretion of the instructor, and will be as reasonable and fair as possible. Special consideration may also be given for employment conflicts (e.g. military duty, travel) if brought to the attention of the instructor prior to the due date for an assignment.

Course requirements for other courses are **NOT** a valid reason for special consideration.

Missed Exams

Missed quizzes cannot be made up. Missed exams can be made up only under extenuating circumstances such as medical emergencies and work conflicts as mentioned above. Please see the instructor as soon as possible if you know you will be unable to attend an exam. You are expected to schedule your departure for any end of quarter travel after your final exam.

Plagiarism

Students are members of a learning community committed to the search for knowledge and truth. Essential to that search is the faithful adherence by all students to the highest standards of honesty and integrity. A grade of "0" or "F" will be assigned to examinations or assignments on which cheating, plagiarism or any other form of academic dishonesty is committed or determined to have occurred. For the detail, see Wright State University Student Handbook under "Academic Dishonesty".

Lecture Outline

The following is the tentative lecture schedule. Topics and time are subject to change.

Week	Topics/Activities
1	Basics of cryptography, signature, certificate, PKI
2	Authentication of users, machines and services
3	Confidentiality of data in storage. File integrity, MD5, SHA1
4	Hidden scripts in DOC and PDF files
5	File System Design issues, Secure deletion of files,
6	Confidentiality of data in transit: WEP, WPA2
7	Secure remote computing: ssh, VPN
8	Covert channels in TCP/IP. Steganography
9	Sandboxes, virtual machines
10	Man-in-the-Middle Attacks; Zombie Machines, DDoS; Privacy
11	Security of Android and iOS Devices
12	Final exam