Instructor Information

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Web Site: http://faculty.cs.nku.edu/~waldenj

Office Hours
M 9-10
MW 12:30-13:30
R 21-22

Summary

Description: Advanced topics in computer security including selections from the following areas: access control, cryptology of modern ciphers, critical infrastructure protection, information warfare, intrusion detection, language-based security, security protocols, software security, steganography, and usable security. This semester the course will focus on web-based security issues.

Prerequisites: CSC 582: Computer Security
Textbooks: None

Student Learning Outcomes

By the end of the course, a successful student should be able to

1. List key research problems in computer security.
2. Identify important techniques for solving computer security problems.
3. Evaluate proposed solutions to computer security problems.
4. Discuss and present analyses of computer security papers.

Responsibilities

Advanced Computer Security is a seminar style class, in which the participants collectively select current security topics that they wish to study. During the first week, we will discuss how to select topics, how to identify relevant materials on those topics, how to evaluate the materials we read or watch, and discuss the selection of discussion leaders. Each student will have a chance to serve as discussion leader multiple times. As the class meets once a week for three hours, there will be multiple discussion sessions in each meeting, usually on related topics.
Discussion leaders will be responsible for preparing to lead a one hour discussion, including checking references and reading related materials beyond the paper or other resource under discussion. Leaders must identify the essential issues in the resource being discussed and develop a set of questions for them, which must be submitted to the instructor by end of day on the Monday prior to the discussion. The instructor will provide feedback on the questions. As discussion leader, it is not necessary to explain or review the readings to the other participants. Instead, it is your responsibility to start the discussion and ensure that it covers the essential issues. The goal is to provide structure and direction for fellow students during discussion.

All students are required to participate in discussion by asking questions, relating ideas to previous papers, developing new ideas, and expressing opinions. Attendance is not sufficient for full credit. To help students prepare for discussion, they will submit a 1-2 paragraph response for each paper at the beginning of class. The response should answer the following questions:

1. What problem does this work attempt to solve?
2. What are the most important novel contributions described in the paper?
3. Are the conclusions supported by the evidence?
4. What other explanations exist for the conclusions?
5. What modification would most significantly improve the research?

The instructor may add additional questions specific to individual papers when certain features of the papers need emphasis.

Resources for discussion can include conference presentations, videos, and industry white papers in addition to academic papers. The Readings page on the class website provides a list of resources and academic search engines to find additional resources. Some resources may require logging into the library proxy service to access from outside the university. If a resource cannot be found online or in the library’s current collections, you can request it from the library’s SourceFinder service.

Topics can be chosen from any area of computer security, including but not limited to:

1. Cloud security
2. Contemporary cryptography
3. Cyberwarfare
4. Cryptography
5. Forensics
6. GPS hacking
7. Hacking techniques
8. HTML5 security
9. Malware analysis
10. Medical device security
11. Privacy and anonymity
12. Ransomware
13. Security visualization
14. Social attacks and defenses
15. Smartphone security
16. Steganography
17. Underground markets
18. Voting security
19. Web application security
20. Wireless car theft

Students will complete a systematic literature survey on a computer security topic of their choosing, subject to instructor approval. The survey will be the basis of a term paper, typically 15-20 single-spaced pages in length, and a class presentation.

Grading

Your grade in this course will be based primarily on your participation in class discussion and a term paper.

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You may miss one class period without receiving any penalty to your discussion participation grade.

The term paper is the largest component of the grade for the course. Topics must be approved by the instructor. Papers will be presented to the class during the last two weeks of the semester.

Students with Disabilities

Students with disabilities who require accommodations (Academic adjustments, auxiliary aids or services) for this course must register with the Disability Services Office. Please contact the Disability Service Office immediately in the University Center, Suite 320 or call 859-572-6373 for more information. Verification of your disability is required in the Disability Services Office for you to receive reasonable academic accommodations.

Academic Dishonesty

The work that you submit in this course is subject to Northern Kentucky University’s Student Honor Code (see http://deanofstudents.nku.edu/codes_and_policies/codeofstudent_rights/.) Issues involving academic dishonesty are taken very seriously by this instructor and are dealt with according to College and Department policy. Academic dishonesty includes but is not limited to:

1. Submission of material which is not the student’s own work.
2. Improper access to evaluation material or records.

3. Conduct which interferes with the work or evaluation of other students.

Some specific examples of dishonesty include:

1. Copying from another person, book, magazine, or other electronic or printed media.

2. Obtaining another person’s exam answer or answers.

3. Assisting another student in submitting work that is not the student’s own.

It is unacceptable to share program code or assignment solutions. It is acceptable and often a good idea to talk about program algorithms and assignment solution strategies, but it is not acceptable to use the same code or code segments, or to share actual solutions to homework problems. Any act of academic dishonesty will result in a grade of zero (0) for that item for the first occurrence. An automatic F in the course will result for the second offense. This policy holds for assignments and programs, as well as for tests. In order to be fair, penalties will be applied to all parties involved regardless of culpability or fault.

Course Calendar

See the course web site http://faculty.cs.nku.edu/~waldenj/classes/2013/spring/csc682/ for a current course schedule that will show which topics have been selected by the participants and who is responsible for each topic.

The instructor reserves the right to alter this syllabus if he deems it to be necessary.