CPE 649: ADVANCED INFORMATION ASSURANCE ENGINEERING
Spring 2011, Tuesday/Thursday, 5:30-6:50, EB 134

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Synopsis: Information assurance (IA) Engineering is about developing systems to remain dependable in the face of malice, error, and mischance. As a discipline, IA focuses on tools, processes, and methods needed to design, implement, and test systems and to adapt existing systems to survive in a hostile environment.

Advanced Information Assurance Engineering will cover topics ranging from how to attack computer systems and networks to how to protect and recover from attacks on computer systems and networks. The student will learn the basic process utilized by computer attackers in order to develop a complete understanding and appreciation of the threat to information assurance. In addition, we will cover the process of detecting, preventing, and recovering from information assurance attacks. This will include the details of Intrusion Detection and Prevention Systems, auditing, Security Vulnerability Assessments, and the Incident Response process.

Grading: Written Test   10%
Practical Exercise – Final Exam   20%
Labs   32%
Project   20%
Homework/Class Participation   18%

Books: Counter Hack Reloaded, by Ed Skoudis (ISBN: 0-13-148104-5)
The Tao of Network Security Monitoring, by Richard Bejtlich (ISBN: 0-321-24677-2)
Network Security Assessment, by Chris McNab (ISBN: 0-596-51030-6)

Schedule:

Session #	Date	Lecture/Lab/Test	Topic(s)
1	01/11/2011	Lecture-01	Unix/Linux overview, Windows Overview, Networking Overview
2	01/13/2011	Lecture-02	Attacking Networks: Reconnaissance, Scanning, Gaining Access

3	01/18/2011	Lab-01	Information Gathering Tools and Techniques
4	01/20/2011	Lab-02	Port and Vulnerability scanners
5	01/25/2011	Lab-03	Exploiting Systems and Networks Part I
6	01/27/2011	Lab-04	Exploiting Systems and Networks Part II
7	02/01/2011	Lecture-03	Attacking Networks: Maintaining Access, Covering Tracks
8	02/03/2011	Lab-05	Trojan Horses and Rootkits Part I
9	02/08/2011	Lab-06	Trojan Horses and Rootkits Part II
10	02/10/2011	Lab-07	TCP Session Hijacking
11	02/15/2011	Lecture-04	Network Security Monitoring
12	02/17/2011	Lecture-05	Student Presentation – Homework 2
13	02/22/2011	Lab-08	Network and host Intrusion Detection Systems
14	02/24/2011	Lecture-06	How to secure a Windows system
15	03/01/2011	Lab-09	Securing Microsoft windows part I
16	03/03/2011	Lab-10	Securing Microsoft windows part II
17	03/08/2011	Lecture-07	How to Secure Unix/Linux systems
18	03/10/2011	Lab-11	Securing Linux Part I
19	03/15/2011	Lab-12	Securing Linux Part II
20	03/17/2011	Lecture-08	Network Security Assessment: Tools, Host and network enumeration, network scanning
21	03/29/2011	Lecture-09	Network Security Assessment
22	03/31/2011	Lecture-10	Student Presentation – Homework 3
23	04/07/2011	Lab-13	Perform a system audit part I
24	04/12/2011	Lab-14	Perform a system audit part II
25	04/14/2011	Lab-15/16	Prepare for Digital Combat Exercise
26	04/19/2011	Lecture-11	Project Presentations
27	04/21/2011	Lecture-12	Project Presentations
28	04/26/2011	Test	Written final – covers whole class
	05/03/2011	Practical exercise	Digital Combat Exercise 18:30-21:00

Exams: Exams will be open book / notes. Don't miss exams without prior permission. If you do miss an exam with permission, we will decide on a makeup day at that time.

Labs: Labs are a very important part of this class. A pre-lab assignment will be given for each lab session. If this assignment is not completed before the lab, you will not be permitted to participate that session. If you must miss a lab session, please notify us in advance and we will attempt to provide a makeup time. A zero will be given for each lab not completed.

Project: Each student will complete a project. These projects are discussed in a separate handout.

Homework: Selected homework assignments will be graded. This will primarily
             consist of short papers that will be written on various subjects throughout
             the semester.

Attendance: Although you will not be graded on attendance, remember that class
             participation does count toward a small part of your grade.

Disability Statement:
             The University of Alabama in Huntsville will make reasonable
             accommodations for students with documented disabilities. If you need
             support or assistance because of a disability, you may be eligible for
             academic accommodations. Students should identify themselves to the
             Disability Support Office (824-6203, UC113) and their instructor as soon
             as possible to coordinate accommodations.