CS 795/895: Topic in .Net Security

Summer 2009

Course Outline

Instructor:	Ravi Mukkamala
Office:	E&CS 3317
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Lecture:	Tuesday, Thursday 3:00-5:30 PM (ECSB 2120)
Office Hours:	Tuesday: 5:30-6:00 PM (E&CS 3317)
Prerequisites:	CS 555 & CS 471
Text:	Programming Microsoft .NET Jeff Prosise ISBN 0-7356-1376-1 2002 **Programming .NET Security (Paperback), O'Reilly** by Adam Freeman, Allen Jones C#: How to program, Deitel, et al, Prentice Hall

Objectives: Gain a basic understanding of systems programming for the Windows System platforms. Emphasis will be placed on network application programming. This course will cover the architecture of the windows programming environment. Major areas of study will be .Net and parts of J2EE. This course will provide a practical application of material from operating systems, computer networks, data structures and object oriented design.

PreRequisites: Strong Background in C++ or JAVA and Operating Systems. Network and Communications concepts would also be useful. Because of the importance of .NET in windows programming, you should be comfortable with the principles of object oriented programming and their implementation.

Course Objectives

Understand the issues and explore solutions for building secure distributed applications. We will discuss some key issues in distributed systems and secure systems. We will then use .Net framework to explore and experiment with the ideas that we discuss. This course certainly requires students to be explorative in nature---it is not a 500-level course.

Attendance: Attendance at classes is not mandatory, but students are responsible for all material covered and announcements made in class. Consequently, if you are going to miss class, be sure to get notes, handouts, etc., from another class member. Class notes and other information will be available at the following WebSite:
http://www.cs.odu.edu/~mukka

Cheating: Everything turned in for grading in this course must be your own work. The instructor reserves the right to question a student orally or in writing and to use his evaluation of the student's understanding of the assignment and of the submitted solution as evidence of cheating. Violations will be reported to the Honor Council for consideration for punitive action. However, it is entirely appropriate seek and give

assistance on procedural matters (such as how to send e-mail, how to run the debugger, how to send files from a home PC to a UNIX workstations). If there is any question on whether a particular behavior is appropriate, the student is encouraged to seek guidance from the instructor.

Grading:

Midterm Exam	100	
Course Project	75	
Presentations	25	
Homework	100	
Final Exam	100	

Tentative Schedule

Date	Topic	Assignment
May 12	Intro to .Net, distributed systems and security	
May 14	More on .Net and Java Security	HW#1
May 19	Part 1/Part2	
May 21	Part 2/Part3/Part4	HW#2
May 26	Part4	
May 28	Part4/Part5	HW#3
June 2	Part 5/Part 6	
June 4	Part 8	HW#4
June 6 (Saturday)	Midterm Exam	
June 9	Part 9/Part 10	HW#5
June 11	Part 11	
June 16	Class Presentations	
June 18	Class Presentations	
June 23	Class Presentations	
June 25 (Thursday)	Final Exam (In class)	

Class Presentations

Date	Slot 1	Slot 2	Slot 3	Slot 4	Slot 5	Slot 6	Slot 7
June 18							
June 23							

Topics to cover

Part 1	.Net Framework ASP.Net examples C# Examples ADO.net example
Part 2	Types of attacks Who is responsible for preventing attacks How to prevent attacks Storing secrets Password policies
Part 3	ASP.Net security Framework Windows authentication Forms authentication Passport authentication
Part 4	Authorization Web services Web services security Impersonation
Part 5	Assemblies Application domains Lifetime of a secure application Runtime security
Part 6	Evidence Permissions Security Policy
Part 7	Code access security Role based security
Part 8	.Net Cryptography Hashing Symmetric key cryptography Asymmetric key cryptography Digital signatures
Part 9	Java versus .Net Security
Part 10	XACML and security policies