Course	**CS 6349.OU1, Network Security**
Professor	Ravi Prakash
Term	Summer 2016
Meetings	Tuesdays, Thursdays, 12:30-2:45 pm, ECSN 2.120

Professor's Contact Information

Office Phone	(972) 883-2289
Office Location	ECSS 4.210
Email Address	ravip@utdallas.edu
Office Hours	To be announced
Other Information	Course information, including PowerPoint slides will be uploaded on eLearning as we go along. UTD email (not eLearning email) is the best way to contact me.

General Course Information

Pre-requisites, Co-requisites, & other restrictions	CS5390 or equivalent; C/C++ or Java programming skills; working knowledge of a UNIX-based operating system
Course Description	In this course, we will study the theoretical and practical aspects of network security. The tentative list of topics include the following: - Cryptography including secret (symmetric) key crypto; modes of operation; stream ciphers; hashes and message digests; and public key crypto - Authentication systems - Kerberos and PKI - Transport-Level security; wireless security - Security of TCP/IP applications including security issues of TCP/IP applications; DNS security; SSL/TLS; web security; and e-mail security
Learning Outcomes	1. Ability to understand the basic working principles and utilities of various cryptographic algorithms including secret key cryptography, hashes and message digests, and public key algorithms 2. Ability to understand design issues and working principles of various authentication protocols. 3. Ability to understand the design issues and working principles of various secure communication standards including Kerberos, certificate and PKI standards, IPsec, and SSL/TLS. 4. Ability to understand the security issues related to various TCP/IP protocols including IPsec, BGP security, VPNs, IDSes, firewalls, wireless security and anonymous routing 5. Ability to understand the security issues related to various TCP/IP applications including DNS, web, e-mail. 6. Ability to understand the issues and existing solutions to various popular network security topics including WLAN security and denial-of-service (DoS) defense
Required Texts & Materials	"Cryptography and Network Security, Principles and Practice," Sixth edition by William Stallings, Prentice Hall.
Suggested Texts, Readings, &	Additional research papers will be provided by the instructor near the end

Materials	of the semester.

Assignments & Academic Calendar

[Topics, Reading Assignments, Due Dates, Exam Dates]

1 lecture	Introduction
2 lectures	DES, Double and Triple DES (Chapters 3, Section 6.1)
3 lectures	RC4, public key crypto, RSA, Diffie-Helman and Elgamal crypto (Sections 7.1-7.5, Chapter 9, Section 10.1-10.2)
3 lectures	Cryptographic hash function, message authentication codes, digital signatures (Chapter 11, Section 12.1-12.8, Sections 13.1-13.4)
1 lecture	Key management and distribution (Section 14.1-14,3, 14.5)
4 lectures	User authentication, Kerberos, network access control, cloud security, transport-level security (Chapters 15, 16, 17)
1 lecture	Wireless network security (Chapter 18)
1 lecture	Email security (Chapter 19)
1 lecture	IP security (Chapter 20)
1 lecture	DNS Security (additional material)
1 lecture	DDoS attack and defense (additional material)
Insert Exam Date(s), Time(s)	Examination 1: July 5 (during class), Examination 2: August 4 (during class)

Course Policies

Grading (credit) Criteria	Examination 1: 30%, Examination 2: 30%, Homeworks: 20%, Projects: 20%
Make-up Exams	No make-up examinations will be scheduled unless the student has a valid medical excuse.
Extra Credit	No extra credit work will be assigned.
Late Work	There will be a 10% penalty per weekday for late submission of homeworks and projects.
Special Assignments	Not applicable
Class Attendance	Strongly encouraged
Classroom Citizenship	Previewing the material prior to class is strongly encouraged. So is participation in class discussions.
Comet Creed	*This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same:* *"As a Comet, I pledge honesty, integrity, and service in all that I do."*
UT Dallas Syllabus Policies and Procedures	*The information contained in the following link constitutes the University's policies and procedures segment of the course syllabus.* *Please go to http://go.utdallas.edu/syllabus-policies for these policies.*

The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.