UTD	**Course**	**CS 6349 – 001 – Network Security**
	Professor	Dr. Kamil Sarac
	Term	Fall 2023
	Meetings	Monday/Wednesday at 8:30am in ECSS 2.306

Professor's Contact Information

Office Phone	972 883 2337
Other Phone	n/a
Office Location	ECS South 4.207
Email Address	ksarac@utdallas.edu
Office Hours	Monday/Wednesday 10:00am to 11:00am or by appointment at other times
Other Information	• Course web page: http://www.utdallas.edu/~ksarac/netsec/

General Course Information

Pre-requisites, Co-requisites, & other restrictions	CS 4390 or 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 and security handshake pitfalls - Kerberos and PKI - TCP/IP security including an overview of TCP/IP protocols; IPsec; BGP security; VPNs and IDSes; firewalls; wireless security; and anonymous routing - Security of TCP/IP applications including security issues of TCP/IP applications; DNS security; SSL/TLS; web security; and e-mail security - Other topics including wireless security and DoS defense and TIME PERMITTING botnets; viruses and worms; VoIP security; IP multicast security (including security issues with IP multicast protocol architecture)
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. 7. Ability to use existing cryptographic utilities to build programs for secure communication.
Required Texts & Materials	• Network Security, Private Communication in a Public World by Kaufman, Perlman, Speciner, 2nd edition (RECOMMENDED). • A number of research papers will be available from the course web page

Suggested Texts, Readings, & Materials	• Applied Cryptography: Protocols, Algorithms, and Source Code in C, 2nd Edition. B. Schneier. John Wiley & Sons. • Cryptography and Network Security, Principles and Practices, 4th Edition, W. Stallings, Pearson & Prentice Hall. • W. R. Stevens, "UNIX Network Programming, Volume 1: Networking APIs -- Sockets and XTI", 2nd edition.

Assignments & Academic Calendar

TBA	Exam 1
TBA	Exam 2
TBA	Project demos
Please see the course schedule page at www.utdallas.edu/~ksarac/netsec/Schedule.htm for more details	

Course Policies

Grading (credit) Criteria	Two Exams: 30% each Homework Assignments: 16% Course Project: 20% Participation in Hand on Activities: 4%
Make-up Exams	No make-up exams unless in case of an emergency situation such as health emergency or similar un-avoid-able situations and you need to provide convincing documentation for it.
Extra Credit	n/a
Late Work	No late turn ins accepted for any homework/project/assignment/etc.
Special Assignments	n/a
Class Attendance	**The below stated CS Department policy applies:** Due to COVID-19, attendance will not be used as part of student evaluations.
Classroom Citizenship	Class participation in terms of asking questions is highly encouraged. Please do not hesitate to ask questions no matter how simple you might think the answer could be. This type of interaction helps improve the effectiveness of the class and breaks the monotony.
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.

These descriptions and timelines are subject to change at the discretion of the Professor.