



TELE6300 Communication and Network Security

FALL 2025

Course Information

Course Title: Communication and Network Security

Course Number: TELE6300

Term and Year: Fall 2025

Credit Hour: 4 SH

CRN: 17755

Course Format: In-person

Instructor Information

Full Name: Ritesh Mukherjee

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Office Hours: TBA

Instructor Biography

Ritesh Mukherjee is an accomplished leader with a focus on global communications and technology. Ritesh leads product strategy and innovation at DriveNets, focusing on pioneering core network transformations and harnessing the potential of AI in the networking space.

Significant roles at industry giants mark Ritesh's journey. As Senior Vice President and General Manager at Inseego, he oversaw product design, solutions engineering, technical marketing, and customer success. His tenure at Reliance Jio involved managing a global portfolio of market-leading enterprise solutions. As Vice President of Product Management at 128 Technology (acquired by Juniper Networks), he led the development of SD-WAN and cloud solutions. Previously, he served as a Product Management Leader at Cisco, leading the software operating systems group. Ritesh's leadership has been pivotal in engineering some of the largest deployments of enterprise and operator networks globally.

Complementing his professional roles, Ritesh is also a dedicated educator. He shares his expertise in Computer Networks and Security as an Adjunct Faculty Member at Northeastern University and the Benjamin Franklin Cummins Institute of Technology.

Ritesh holds a Ph.D. in Computer Science from Concordia University, Montreal.

Course Prerequisites

N/A

Course Description

This course will equip students with the skills to apply and implement network and communication security in enterprise environments. By the end of the course, students will have a comprehensive understanding of network and communication security principles and practices and be able to apply these skills in real-world scenarios.

Students will learn various concepts related to computer security and network protection. The course will cover systems security, access control, network infrastructure, assessments and audits, cryptography, and organizational security. This material will help protect enterprise networks' confidentiality, integrity, and availability. Students will also learn about common network attacks, cryptography basics, computer forensics, and operational/organizational security related to physical security, disaster recovery, and business continuity. The course will also discuss recent trends in network security attacks and cyber-attacks in general and analyze various attacks, including worms and trojans, SSL/TLS session renegotiations/compression, DNS security, spam, and crypto-based countermeasures.

The course has a laboratory component. In addition to the conceptual problems, each student must perform several laboratory assignments on their computer in a sandboxed virtual machine. Labs include network scanning, host/network intrusion detection, buffer overflow attacks, password cracking, SQL injection, and cross-site scripting.

The course culminates in a project where the students apply the acquired conceptual and practical knowledge of network security protocols and applications to designing network security for an enterprise scenario. The project will be done in teams of 3-4 students.

Course Learning Outcome

Upon successful completion of this course, students will be able to:

- Ensure the confidentiality, integrity, and availability of data
- Design computer security to meet business requirements
- Design security to meet technical requirements
- Provide risk mitigation and ensure business continuity
- Design an audit strategy
- Plan and design administrative access to the network
- Plan security for network service
- Plan, design, and manage a certification authority hierarchy
- Perform encryption of transmitted data
- Implement firewall rules and strategies
- Design, define, develop, and maintain a comprehensive security plan

Required Textbook

CompTIA Security+ Guide to Network Security Fundamentals, 8th Edition - Mark Ciampa
ISBN-13: 9798214000633

Course Website

<https://northeastern.instructure.com/courses/232108>

Tentative Schedule

WEEK	TOPIC	TYPE
1 (September 05)	<i>Introduction to Information Security</i>	<i>Lecture</i>
2 (September 12)	<i>Pervasive Attack Surfaces and Controls</i>	<i>Lecture</i>
3 (September 19)	<i>Fundamentals of Cryptography</i>	<i>Lecture</i>
4 (September 26)	<i>Advanced Cryptography</i>	<i>Lecture</i>
5 (October 03)	<i>Endpoint Vulnerabilities, Attacks, and Defenses</i>	<i>Lecture</i>
6 (October 10)	<i>Mobile and Embedded Device Security</i>	<i>Lecture</i>
7 (October 17)	<i>Identity and Access Management</i>	<i>Lecture</i>
8 (October 24)	Midterm	Exam
9 (October 31)	<i>Infrastructure Threats and Security Monitoring</i>	<i>Lecture</i>
10 (November 07)	<i>Infrastructure Security</i>	<i>Lecture</i>
11 (November 14)	<i>Wireless Network Attacks and Defenses</i>	<i>Lecture</i>
12 (November 21)	<i>Cloud and Virtualization Security</i>	<i>Lecture</i>
13 (November 28)	<i>Incident Preparation and Investigation</i>	<i>Lecture</i>
14 (December 05)	<i>Oversight and Operations Information Security Management</i>	<i>Lecture</i>
15 (December 12)	Final Project Submission	Exam Project

Instruction Methodology

This course will combine traditional lectures with hands-on assignments. Classes will focus on concepts and ideas, while assignments will provide substantial experience and skills development. Students will also have a final project, allowing them to apply what they learned from the lectures to exciting topics.

Grading Policy

Coursework will be weighted as follows:

Work Type	Percentage
Assignment	12%
Lab	24%
Midterm Exam	20%
Project	20%
Final Exam	20%
Attendance	4%

Examination Policy

There are two primary examinations: the mid-term and the final exam. The dates and rooms for these examinations will be announced in advance. The assessments will consist of material that has been covered.

Grading Scale

Percentage Range	Letter Grade	Grade Point Equivalent
95.0–100.0%	A	4.000
90.0–94.9%	A-	3.667
87.0–89.9%	B+	3.333
84.0–86.9%	B	3.000
80.0–83.9%	B-	2.667
77.0–79.9%	C+	2.333
74.0–76.9%	C	2.000
70.0–73.9%	C-	1.667
69.9% and Below	F	0.000

<https://registrar.northeastern.edu/article/university-grading-system/>

Incomplete Grades

An incomplete grade may be reported by the instructor when a student has failed to complete a significant component of a required course, such as homework, a quiz, a final examination, a term paper, or a laboratory project. Students may make up an incomplete grade by fulfilling the instructor's requirements. Please note that instructors' policies regarding the granting of incomplete grades may vary, and the final decision on an incomplete grade is at the instructor's discretion. **Instructors may deny requests for an incomplete grade.** If the missing assignment(s) have not been submitted to the instructor within 30 days from the end of the term in which the course was offered, or the agreed upon due date, the grade entered will reflect the student's grade in the course for the work completed and the missing assignments receiving no credit toward the final grade.

Attendance/Late Work Policy

Attendance Policy

In each term, students enrolled in on-ground sections are expected to be on campus and attending class beginning with the first day of classes. Students in online sections are expected to log in and participate in class beginning with the first day of classes.

Students who join a class after the first day of class during the university add period, or who are approved for late registration by the instructor and the Graduate School of Engineering, are responsible for all coursework missed before enrolling. In the interest of students' success, the college does not support students arriving late to class after the university add deadline. **Enrolled**

students who do not attend class during the first week of a semester risk being dropped from the course.

In cases where an enrolled student cannot arrive on campus by the first day of class due to circumstances beyond their control, it is the student's responsibility to contact the instructor for approval and notify the Graduate School of Engineering.

Students registered in MGEN courses (INFO, CSYE, and DAMG) are allowed a maximum of 2 absences per course, with three or more absences resulting in an 'F' for that course. Course instructors are not expected to make accommodations and students are expected to inform their instructors of any absences in advance of the class. Should a student anticipate being unable to attend 3 or more classes, they should discuss their situation with their Academic Advisor to explore other types of leave and accommodations in accordance with the University's academic and global entry expectations. Students may be asked to share communications about class absences with their Academic Advisor. If a student is sick long-term or experiences a medical issue that prevents class attendance, it is strongly encouraged that they speak with their Academic Advisor (coe-gradadvising@northeastern.edu) to learn more about the Medical Leave of Absence. International students should review the Office of Global Services webpage to understand their visa compliance requirements.

Teaching Assistants (TAs) or Instructional Assistants (IAs) will be present at each class to collect student attendance.

Late Work Policy

Students must submit assignments by the deadline in the time zone noted in the syllabus. Students must communicate with the faculty before the deadline if they anticipate submitting their work late. Work submitted late without prior communication with the faculty will not be graded.

Course Evaluations

Student feedback on their learning experience is valuable and helps improve future courses. We encourage all students to complete the course evaluation surveys as soon as they become available.

Surveys are distributed at both the midterm mark and the end of the term via email and are entirely anonymous and confidential. Any questions about the surveys can be directed to mgen-programs@coe.northeastern.edu.

MGEN Student Feedback

Students who would like to provide the MGEN unit with anonymous feedback on this particular course, Teaching Assistants, Instructional Assistants, professors, or to provide general feedback

regarding their program, may do so using this survey:

https://neu.co1.qualtrics.com/jfe/form/SV_cTIAbH7ZRaaW0Ki

Academic Integrity

A commitment to the principles of academic integrity is essential to the mission of Northeastern University. The promotion of independent and original scholarship ensures that students derive the most from their educational experience and their pursuit of knowledge. Academic dishonesty violates the most fundamental values of an intellectual community and undermines the achievements of the entire University.

As members of the academic community, students must become familiar with their rights and responsibilities. In each course, they are responsible for knowing the requirements and restrictions regarding research and writing, examinations of whatever kind, collaborative work, the use of study aids, the appropriateness of assistance, and other issues. Students are responsible for learning the conventions of documentation and acknowledgment of sources in their fields. Northeastern University expects students to complete all examinations, tests, papers, creative projects, and assignments of any kind according to the highest ethical standards, as set forth either explicitly or implicitly in this Code or by the direction of instructors.

The following is a broad overview, but not an all-encompassing definition, of what constitutes a violation of academic integrity:

Cheating: The University defines cheating as using or attempting to use unauthorized materials, information, or study aids in any academic exercise. When completing any academic assignment, a student shall rely on their own mastery of the subject.

Fabrication: The University defines fabrication as falsification, misrepresentation, or invention of any information, data, or citation in an academic exercise.

Plagiarism: The University defines plagiarism as using as one's own the words, ideas, data, code, or other original academic material of another without providing proper citation or attribution. Plagiarism can apply to any assignment, either final or drafted copies, and it can occur either accidentally or deliberately. Claiming that one has "forgotten" to document ideas or material taken from another source does not exempt one from plagiarizing.

Unauthorized Collaboration: The University defines unauthorized collaboration as instances when students submit individual academic works that are substantially similar to one another. While several students may have the same source material, any analysis, interpretation, or reporting of data required by an assignment must be each individual's independent work unless the instructor has explicitly granted permission for group work.

Participation in Academically Dishonest Activities: The University defines participation in academically dishonest activities as any action taken by a student with the intention of gaining an unfair advantage over other students.

Facilitating Academic Dishonesty: The University defines facilitating academic dishonesty as intentionally or knowingly helping or contributing to the violation of any provision of this policy.

Please visit <https://osccr.sites.northeastern.edu/academic-integrity-policy/> to access the full academic integrity policy.

University Health and Counseling Services

As a student enrolled in this course, you are fully responsible for assignments, work, and course materials as outlined in this syllabus and in the classroom. Over the course of the semester if you experience any health issues, please contact UHCS.

For more information, visit <https://www.northeastern.edu/uhrs>.

Student Accommodations/Disability Access Services (DAS)

Northeastern University and Disability Access Services (DAS) are committed to providing disability services that enable students who qualify under Section 504 of the REHABILITATION ACT and THE AMERICANS WITH DISABILITIES ACT AMENDMENTS ACT (ADAAA) to participate fully in the activities of the university. To receive accommodations through DAS, students must provide documentation of a disability that demonstrates a current substantial limitation. Accommodations are approved based on a review of the information that is submitted and reviews are done on a case-by-case basis.

If the course is conducted in an on-ground (in-person) format, students are expected to attend class physically as scheduled. Professors are **not required to provide virtual attendance links** unless a student has documented accommodation approved by the **Disability Access Services (DAS) office** and their **Academic Advisor**. If a student requires accommodation for remote participation, they must submit a formal request through the Disability Office and coordinate with their Academic Advisor prior to the course start date.

For more information, visit <https://disabilityaccessservices.sites.northeastern.edu/>

Office of Global Services

As an F-1, J-1, or Study Permit student, you must meet certain obligations in order to maintain lawful nonimmigrant status. Maintaining status is necessary in order to retain eligibility for the benefits of F-1 or J-1 status, such as employment authorization and program extension, and can be crucial to a successful application for a change or adjustment of nonimmigrant status in the future. Failure to maintain your nonimmigrant status can result in serious problems with immigration and *could lead to deportation from the U.S. or Canada.*

Students must maintain on-ground presence throughout the academic term. At Northeastern, there are four different defined instructional methods: Traditional, Hybrid, Live Cast, and Online. Traditional, Hybrid, and Live Cast courses meet the Visas' on-ground presence requirements. **Online courses do not meet the Visas' on-ground presence requirements.**

Students enrolled in Summer courses should adhere to [OGS guidelines on maintaining status during the Summer term.](#)

For more information please visit, <https://international.northeastern.edu/ogs/current-students/understanding-visa-requirements/guidelines-on-maintaining-status/>

Library Services

The Northeastern University Library is at the hub of campus intellectual life. Resources include over 900,000 print volumes, 206,500 e-books, and 70,225 electronic journals.

For more information and for education specific resources, visit <https://library.northeastern.edu>
Network Campus Library Services: [Northeastern University Library Global Campus Portals](#)

24/7 Canvas Technical Help

For immediate technical support for Canvas, call 617-373-4357 or email help@northeastern.edu
Canvas Student Resources: <https://canvas.northeastern.edu/student-resources/>

For assistance with my Northeastern e-mail, and basic technical support:

Visit ITS at <https://its.northeastern.edu>

Email: help@northeastern.edu

ITS Customer Service Desk: 617-373-4357

Outreach, Engagement, Belonging

Northeastern University is committed to fostering a community of belonging, which is essential to the advancement of Northeastern University's mission of teaching and research. Our university is stronger as a result of the varied backgrounds, experiences, and perspectives that all members of our global community bring to the pursuit of knowledge. Embracing this pluralism is not the work of one office, department, or academic unit. It is a shared responsibility that spans disciplines and boundaries. By harnessing the power of our differences, we will continue to light the path to bold new ideas and life-changing discoveries.

It is my intention that students from all backgrounds and perspectives will be well served by this course, and that the diverse experiences that students bring to this class will be viewed as an asset. I welcome individuals of all ages, backgrounds, beliefs, ethnicities, genders, gender identities, gender expressions, national origins, religious affiliations, sexual orientations, socioeconomic background, family education level, ability – and other visible and nonvisible differences. All members of this class are expected to contribute to a respectful, welcoming and

belonging environment for every other member of the class. Your suggestions are encouraged and appreciated.

Please visit [Belonging at Northeastern – Northeastern Provost](#) for complete information.

Title IX

Title IX of the Education Amendments of 1972 protects individuals from sex or gender-based discrimination, including discrimination based on gender-identity, in educational programs and activities that receive federal financial assistance. Northeastern's Title IX Policy prohibits Prohibited Offenses, which are defined as sexual harassment, sexual assault, relationship or domestic violence, and stalking. The Title IX Policy applies to the entire community, including male, female, transgender students, faculty and staff. In case of an emergency, please call 911.

The Office for University Equity and Compliance (OUEC) leads Northeastern University's efforts in maintaining compliance with all federal, state, and provincial civil rights laws and prohibits discrimination within any of its programs, activities, and services. Please visit <https://ouec.northeastern.edu/> for more information and for the link to file a report.

This course syllabus may be subject to change.