Spring 2024

IT 120-004, 006: Introduction to Networking Technology

Lori Watrous-deVersterre

IT120 Introduction to Networking Technology

Course Description: IT 120 is an introduction to the basics of networking in a modern operating system environment. Emphasis is placed on the application and management of networking technology. Topics to be covered include: the layered model, network hardware and technologies, network protocols, wired and wireless networks, and TCP/IP. This is an introductory networking course and is oriented toward freshman and sophomores. **There are no prerequisites for this course.**

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Office Hours: See Canvas course information for standard open office hours, or by appointment

Tutoring: See Canvas for ACM and YWCC (https://computing.njit.edu/tutoring) mentoring programs

Text: *MANAGING AND TROUBLESHOOTING NETWORKS, 6th edition,* Mike Meyers, McGraw Hill, 2022, ISBN: 978-1-264-26903-7

Note: *1st 2nd 3rd & 4th editions of this textbook should not be used. The 5th edition has significant differences, and the order of chapters are different and not recommended.* ***The 6th edition is the version used in class.***

Canvas: Additional material and resources is found on the Canvas class website, (https://canvas.njit.edu/). It will be updated as the course progresses and contains the most recent information.

Schedule: **The following schedule is subject to change. Updates will be discussed in class.**

Day	Topics	Reading Due
Week1 **1/18, 1/22**	**Course Information** **Layered Model** • Functions of the layers • Protocols • Binary and Hexadecimal & Boolean Logic	Read Chapter 1
Week 2 **1/25, 1/29**	**Physical Layer** • Topology • Cabling • Repeaters and Hubs • Installing a physical network	Read Chapters 2, 5
Week 3 **2/1, 2/5**	**Data Link Layer** • Ethernet Basics • MAC addresses • CSMA/CD • Modern Ethernet • Bridges	Read Chapter 3, 4 **QUIZ1 – Layered Model & Physical Layer**
Week 4 **2/8, 2/12**	**Data Link Layer** • Wireless networks • 802.11 WiFi • CSMA/CA • Wireless access points	Read Chapter 14
Week 5 **2/15, 2/19**	**Data Link Layer** • Wide Access Networks • Modems, DSL, Cable Modems • Satellite, Wireless, Fiber • Using remote access	Read Chapter 13
Week 6 **2/22, 2/26**	**Network Layer** • IP addresses and dotted decimal • ARP • Class-ful IP Addresses and masks	Read Chapter 6 (pg. 128-147) **QUIZ2 – Data Link Layer**

Week 7 **2/29, 3/4**	**Network Layer** • Static, Dynamic, & Private IP addresses • DHCP • MTU and Fragmentation	Read Chapter 6 (pg. 153-166) **QUIZ3 – Masks & Network Layer**
Midterm March 7th		
Week 8.2 **3/18**	**Network Layer** • Subnetting • CIDR Class-less IP Addresses • NAT	Read Chapter 6 (pg. 147-153)
Spring Break April 11-16		
Week 9 **3/21, 3/25**	**Network Layer** • Routers • Forwarding • Routing	Read Chapter 7
LAST DAY TO WITHDRAW April 1st		
Week 10 **3/28, 4/1**	**Network Layer** • IPv6 IP Addresses • Using and moving to IPv6	Read Chapter 12
Week 11 **4/4, 4/8**	**Transport Layer** • Ports • TCP and UDP **Application Layer** • Domain Name System (DNS) • Sockets • HTTP	Read Chapters 8, 9 **QUIZ4 – Subnetting & IPv6**
/Week 12 **4/11, 4/15**	**Networks** • Virtual Private Network • Virtual LANs • Multilayer Switches **Security Standards** • Security components & standards	Read Chapters 11, 10 **QUIZ5 – Transport & Application Layers**
Week 13 **4/18, 4/22**	**Security** • Managing Risk • Protecting Your Network	Read Chapter 18, 19
Week 14 **4/25, 4/29**	**Data Centers**	Read Chapter 20
Week of 5/3-5/9	**NO MAKE UP EXAMS WILL BE GIVEN** **Final Exam – time and place to be announced**	Study!

Note: Schedule may change. Refer to class web page for most recent information.

Credit: 3

Grades: Final grades will be based on:

Midterm	25%	250 points
5 Quizzes	5%	50 points
Final	25%	250 points
Class participation	5%	50 points
Homework (5 assignments)	25%	250 points
Current Events	15%	150 points

There is a total of 1000 possible points for the term.

A	900 -1000 points
B+	850 – 899 points
B	800 – 849 points
C+	750 – 799 points
C	700 – 749 points
D	600 – 699 points
F	0 - 599 points

Grades are based solely on the points you earn. I may curve up when assigning grades, but I will under no circumstances curve down. For example, you may earn an A if you have 898 points, but you will not earn lower than a B+ if you have 850 points.

I will not assign incompletes unless there are extraordinary circumstances.

POLICIES:

Assignments (Homework and Project)

Homework for this class consists of 5 homework assignments. Their purpose is to help you keep up with the material and assess your readiness for the midterm and final.

Homework is due at midnight (**11:55pm**) on the due date specified on the schedule. It will be submitted via Canvas electronically. Late homework will not be accepted unless there is a reason beyond your control. In most cases, homework is graded online and return to you electronically. I will also post the solutions online. Once solutions are posted, no homework, regardless of reason will be accepted. Submit homework as a **Word** or **PDF** document. **Handwritten assignments are not accepted excepted when outlined in the assignment.**

A **current event,** presented by each student, on changes in networking technology is required. This broad topic can cover protocols, hardware, or applications that are specific to networking technology. The assignment is designed to have you research and locate a recently published, professionally written, article that is relevant to networking technology today. The presenter must email to the instructor **96 hours (4days)** prior to the start of class the article, a summary of the article and any material they will use to describe the technology and query the class' response. The purpose of this assignment is to give you practice in presenting technical information in a clear and simply explained manner that can be disseminated to both technical and non-technical audiences. This is a crucial skill for an information technology professional to master in order to be effective in the business world. Further project details are provided in class and on Canvas.

Participation

I expect you to actively participate in class by asking questions and to come prepared to answer questions in class. It is important to have read the Chapter in advance of class. You will get more out of the class if you spend time thinking about the material in advance. **This is a face-to-face class and attendance will be taken**.

I reserve the right to issue surprise quizzes at my discretion which will be included as part of the participation grade. This ensures you have done the readings and forces you to keep up with the material.

Makeup Tests and Assignments

Requests for makeup tests and assignment changes must be made in advance with the instructor and will only be approved if the reason is beyond your control.

Note: Calculators are not necessary and **not permitted** for exams and quizzes in this course.

Academic Integrity Policy

"Academic Integrity is the cornerstone of higher education and is central to the ideals of this course and the university. Cheating is strictly prohibited and devalues the degree that you are working on. As a member of the NJIT community, it is your responsibility to protect your educational investment by knowing and following the academic code of integrity policy that is found at: http://www5.njit.edu/policies/sites/policies/files/academic-integrity-code.pdf.

Please note that it is my professional obligation and responsibility to report any academic misconduct to the Dean of Students Office. ***Any student found in violation of the code by cheating, plagiarizing or using any online software inappropriately will result in disciplinary action. This may include a failing grade of F, and/or suspension or dismissal from the university.*** *If you have any questions about the code of Academic Integrity, please contact the Dean of Students Office at dos@njit.edu"*

All your assignments must constitute original work. These assignments may **NOT** be done in collaboration with anyone else (unless otherwise approved). No credit will be given for any assignment that is copied—in part or in its entirety—from another person. **Both people involved will receive no credit.**

Note, however, that you may "talk" about assignments with each other, but such discussions must remain at a conceptual level. In summary, keep in mind:

- Do NOT ask to see another person's assignment, particularly a finished assignment.
- Do NOT pass your assignment around to other members of the class.
- Do NOT submit duplicate assignments. Even partially duplicate assignments will NOT be accepted.
- If the instructor is at all **uncomfortable about the originality of your work**, no credit will be given.
- Do NOT submit an assignment used for previous assignments in this or other courses.

TURNITIN Policy

NJIT uses Turnitin.com, a service that helps prevent plagiarism on student papers. I will be using the Turnitin.com service at my discretion to determine the originality of student work. If I submit your work to

Turnitin.com, it will be stored by Turnitin.com in their database as long as their service remains in existence. If you object to this storage, **you must let me know no later than two weeks after the start of this semester.** Note, I may utilize other services and techniques to check for plagiarism.