NET 460 Syllabus – Foundations of Network Technologies – Spring 2021

Instructor	Dr. Sharief Oteafy	**Phone**	312 362-8127
Office	CDM 846	**E-mail**	soteafy@depaul.edu
Office Hours	Tuesday's 11 – 12:30 pm (or by appointment)	**Website**	d2l.depaul.edu
Class Location	**Remote (Zoom)**	**Lecture time**	**Tuesdays 6 pm – 9 pm**

--- **Any changes made to this syllabus will be announced in class as well as D2L -- This is Version 1: Mar 29th** ---

Course Overview

This is an introductory graduate course on network technologies for local and wide area networks. The course examines in detail the core concepts for network architectures, Ethernet systems including wired, wireless, and Metro, virtual local area networks, storage area networks, optical networking, and more traditional network services.

PREREQUISITE(S): NET 405 and NET 413

Resources:

- *Optional text:* **Data Communications and Networking**, 5th edition, Behrouz A. Forouzan, McGraw-Hill, 2012.
- Cisco *Packet Tracer* Simulator (available on course D2L site)

Grade distribution over required coursework

Task	% of final grade
2 homework assignments	25 %
Quiz	10 %
Midterm exam	25 %
Final exam	30 %
Class participation & Discussions	10 %

Coursework

Course topics expected to be covered in each class and the corresponding readings in the textbook course are listed in the course schedule on page 3. Note that this is a tentative schedule, which may be adjusted as we advance through the course, depending – for example – on discussions arising in class.

The Class Participation & Discussion grade will be **earned** as follows: students gain **1 %** credit towards their final grade for each lecture *actively* attended (total of up to 10% of final grade for 10 class sessions).   Active attendance means that you will respond if I call on you, **and** actively engage in class discussions. It is critical that you strive to attend all class sessions, and engage with the material in the live class discussions.

Course policies

General academic policies

All students are required to manage their class schedules each term in accordance with the deadlines for enrolling and withdrawing as indicated in the University Academic Calendar. Information on enrollment, withdrawal, grading and incompletes can be found at: cdm.depaul.edu/enrollment. Note that **April 9th 2021** is the last date to drop the class with no penalty.

Plagiarism

There is a "zero-tolerance policy" regarding plagiarism. This stands for both the plagiarizer and the person(s) facilitating plagiarism (e.g., allowing someone to plagiarize their work). There's a great resource put together by DePaul University, which you can find here: https://resources.depaul.edu/teaching-commons/teaching-guides/learning-activities/Pages/avoiding-plagiarism.aspx

Academic Integrity

One of the core principles of education is establishing Academic Integrity. It is a viable component in the classroom, one by which learning objectives could be honestly and efficiently met. The principles of academic integrity should span all of your learning endeavours, within and beyond this course. For more information on Academic Integrity, especially definitions and norms, please visit: https://offices.depaul.edu/academic-affairs/faculty-resources/academic-integrity/Pages/resources.aspx. This will be the basis of all of our interactions in this course. If you have any questions or concerns, feel free to drop by and see me.

Deadlines and submission policies

Assignments are due on D2L by 11:59 pm on the deadline day posted on each assignment, unless otherwise announced. All of your work (exams, assignments, report, etc) must be your original work. Any evidence of departure from Academic Integrity will be reported, and ensuing sanctions will be pursued. You are expected to read, understand and comply with DePaul's policy on Academic Integrity, which you can reach from the aforementioned website. **Late submissions lose a 10% penalty for every 24 hour delay past the deadline.**

Missing exams and/or deadlines

Emergencies happen and that is quite understandable. If you miss an exam due to a certain emergency (e.g., accident, emergency hospitalization, etc) please communicate with me as soon as you can to resolve any outstanding issues. If a major illness hinders you from attending an exam or submitting a deliverable (assignment), you need to contact me beforehand via e-mail. Notices received after the deadline will not be accounted for (unless for an emergency as highlighted above). If the illness occurred after the deadline, even if accompanied with a doctor's note, you would receive a zero for that exam/deliverable.

Otherwise, missing an exam without prior approval will warrant an automatic zero. Generally, all extensions are considered on a case-by-case basis. Falling sick prior to a deadline does not automatically warrant an extension. If you have any questions or concerns, please don't hesitate in contacting me.

Disability Accommodation

Feel free to speak to me as soon as possible regarding any difficulties you feel you might be encountering in this course, within our first week of classes. Kindly refer to DePaul's Center for Students with Disabilities website https://offices.depaul.edu/student-affairs/about/departments/Pages/csd.aspx. If you feel that any given disability is hindering you, or you are not sure and wish for a consult, please reach out to CSD at csd@depaul.edu; they are trained to help out and point you to the appropriate resources. All of us at DePaul have the common goal of helping you learn, and achieve your potential.

Grade calculation

Final grades will be calculated as follows: points earned divided by possible points in each category will be multiplied by the contribution percentages shown to yield a total course percentage score between 0% and 100%. Letter grades will be assigned as:

A = 90% - 100%	A- = 88% - 90%	B+ = 86%-88%	B = 80% - 86%	B- = 78% - 80%
C+ = 76% - 78%	C = 70% - 76%	C- = 68% - 70%	D+ = 66% - 68%	D = 60% - 66%
		F = 0% - 60%		

Class schedule and topics

Week	Class date	Tentative Topics	Textbook chapters & References
1	March 30	Course overview Introduction, standards & OSI Topologies & TCP/IP layers	Ch. 1 & Ch.2
2	April 6	Data Signals Data rate, signal bandwidth, channel bandwidth Transmission and network impairments Physical Layer media overview	Ch.2 Sec. 3.1 – 3.7 Sec. 4.1 Ch. 7
3	April 13	**Short quiz** Data Link Layer functions and methods Introduction to LAN networks and market trends 802.3 Ethernet LAN standards	Ch. 9, Sec. 10.1-10.4 Sec. 11.1-11.2, Ch. 13 IEEE 802 standards
4	April 20	802.3 Ethernet LAN standards (continued) MAC layer: CSMA/CD protocol Flow control	Sec 11.1 – 11.2 Ch. 12
5	April 27	**Midterm exam** Ethernet LAN networking	
6	May 4	Ethernet switch networks 802.1Q VLAN Link aggregation	Ch. 17 Understanding RSTP
7	May 11	Ethernet 802.1p Class of Service 802.11 LAN Wireless standards and principles	Sec. 30.1-30.2 Sec. 15.1-15.2
8	May 18	WAN networks and market trends WAN physical layer transport WAN Access network technologies/protocols	Sec. 6.1 & 14.1-14.3
9	May 25	WAN switching methods – overview Traffic policing and shaping	Ch. 8 & Ch. 18 Sec. 30.1 & Sec.14.4 Switching methods
10	June 1	WAN switching technologies Next Generation Networking	Reference material to be posted
11	June 8	**Final Exam**	

Exams (quiz, midterm and final) will be carried out using LockDown Browser

LockDown Browser will be utilized for all exams in this course, which is a software used for taking exams online. With LockDown browser:

- Assessments are displayed full-screen and cannot be minimized.
- Browser menu and toolbar options are removed, except for Back, Forward, Refresh and Stop.
- It prevents access to other applications including messaging, screen-sharing, virtual machines, and remote desktops.
- Printing and screen capture functions are disabled.
- Copying and pasting anything to or from an assessment is prevented.
- Right-click menu options, going to previous screens (i.e. previous questions), function keys, keyboard shortcuts and task switching are disabled.
- An assessment cannot be exited until the student submits it for grading.

Zoom overview & attendance:

We're going to meet using Zoom, a video conferencing tool. Zoom allows people to gather in a virtual room and meet synchronously, as well as record the session for offline viewing. Please find the access info to join our Zoom classes in the "Welcome to Class" news item. During our sessions, I'll be speaking to you directly, and going over Power Points slides (sharing my screen). I'll also be recording our sessions and uploading them to our D2L course site.

You are expected to *actively* attend all classes via Zoom, in lieu of attending in person for an in-class session. You need to participate in the discussions, and demonstrate that you are engaged with the material. Throughout the classes, you will be called upon to answer questions and/or engage in discussions. Your participation grade is earned through these interactions. This is vital to sustain a lively "remote class" environment.

Best practices during our Zoom session:

List your name: Please sign in with your full name, so I know who's who.

Muting your audio (and video): Unless you're actively speaking, please keep your audio muted. This will help prevent background noise in our discussion. If you need to get up and change locations, please mute your video before you move. You'd be surprised how distracting it is to see a camera in motion during the session!

Speaker View and Gallery View: There are two ways to view the Zoom participants:

- Speaker View: This view prioritizes the person speaking, so you'll see a large-screen view of the speaker and a handful of other participants right above.

- Gallery View: This is the "Brady Bunch" view, where you'll see a grid with small videos of all participants. A small green box will appear around the person speaking.

Screenshare and Full Screen View: If someone in the Zoom session starts sharing their screen, Zoom will automatically go into "full screen mode" on your computer. You can navigate out of full screen mode by hovering your mouse over the video, and at the top, clicking View Options > Exit Full Screen.

Muting notifications: If you un-mute your audio and you're speaking, remember that the class will be able to hear any audio coming through. So, if you get a text message or email notification, we'll hear it. You may want to mute your notifications when our Zoom session starts.

Chat option: Given that I'll be running multiple tasks, I **will not** be able to look at the chat window all the time. Please don't use it. If you need to say something, simply use the "*raise your hand*" option.

Video: Yes, I am planning to keep my video on. You are encouraged to do so as well, however that is totally up to you. If you do keep your video on, please conduct yourself as you would in a public place. I'd rather not make a lengthy list of Zoom etiquette here, but I trust you'll use your common sense :)

Video background: While it is tempting to use the "background" option, remember that it will (very) quickly eat up your battery power. Also, it can get distracting :) if you choose one, please make sure it is neutral/simple.

Additional Zoom Resources: Getting Started with Zoom | How to Join a Meeting

Learning Outcomes

After completing this course, students will be able to:

- Demonstrate principles of switch learning and forwarding
- Describe network addressing at layer 2 (MAC), layer 3 (IP) and layer 4 (ports) and show sample values through a packet transfer.
- Determine STP root switch, port roles and blocked ports for any switched network
- Describe routing table structure and how packets are forwarded through a router
- Describe basic RIP and OSPF configuration
- Analyze WAN Technologies and Data Communication principles

Course evaluations and discourse

During the course, your feedback on how well the course is running (pace, difficulty, resources, etc) will be solicited. This is a vital component in improving and tailoring this course to your learning objectives. While all students are expected to achieve the learning outcomes highlighted above, each of us inevitably learn differently. If you have any concerns about how the course is running, or would like to suggest an improvement, feel free to reach out to me. Also, on week 10, we will hold the official course evaluations in class.