

TDC 460 Syllabus – Foundations of Network Technologies – Spring 2018

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| Instructor | Dr. Sharief Oteafy | Phone | 312 362-8127 |
| Office | CDM 846 | E-mail | soteafy@depaul.edu |
| Office Hours | Wednesdays 3 – 4:30 pm (or by appointment) | Website | d2l.depaul.edu |
| Class Location | LEWIS 1208 | Lecture time | Tuesdays 5:45 pm – 9 pm |

--- Any changes made to this syllabus will be announced in class as well as D2L -- This is Version 1: Mar 15th ---

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): TDC 405 and TDC 413

Resources:

- **Required 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 |
|------------------------|------------------|
| 3 homework assignments | 25 % |
| 2 labs | 20 % |
| Midterm exam | 25 % |
| Final exam | 25 % |
| Class participation | 5 % |

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 grade will be earned as follows: students gain 1% credit towards their final grade (with a maximum of 5%) for active attendance. Which means that you will respond if I call on you, and actively engage in class discussions. Active participation is equally expected from online students.

Drop dates

Kindly refer to this link for course drop dates: <https://offices.depaul.edu/oaa/academic-calendar/Pages/Full-Year-2017-2018.aspx>

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 Sept 19th 2017 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://offices.depaul.edu/oaa/faculty-resources/teaching/academic-integrity/Pages/ai-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/oaa/faculty-resources/teaching/academic-integrity/Pages/default.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 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 receive a 20% penalty for every 24 hour delay, starting from the minute 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, ideally within our first week of classes. Kindly refer to DePaul's Center for Students with Disabilities website at <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.

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:

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|----------------|----------------|----------------|----------------|----------------|
| 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 | Assignments (on the week of) |
|------|------------|---|--|---|
| 1 | March 27 | Course overview Introduction, standards & OSI Topologies & TCP/IP layers | Ch. 1 & Ch.2 Cisco IOS Command Line Tutorial | Read: 2950 Cisco Switch Family overview 2950 software configuration guide |
| 2 | April 3 | Line coding Analog to digital conversions Circuit capacity Codes & signals | Ch.2 Sec. 3.1 – 3.7 Sec. 4.1 Ch. 7 | HW 1 posted |
| 3 | April 10 | Error Detection and Correction 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 | HW 1 due & Lab 1 posted |
| 4 | April 17 | 802.3 Ethernet LAN standards (continued) MAC layer: CSMA/CD protocol Flow control | Sec 11.1 – 11.2 Ch. 12 | Lab 1 due |
| 5 | April 24 | Ethernet LAN networking Ethernet switch networks 802.1Q VLAN Link aggregation | Ch. 17 Understanding RSTP | HW 2 posted |
| 6 | May 1 | Midterm exam | | HW 2 due |
| 7 | May 8 | Ethernet 802.1p Class of Service 802.11 LAN Wireless standards and principles | Sec. 30.1-30.2 Sec. 15.1-15.2 | Lab 2 posted |
| 8 | May 15 | WAN networks and market trends WAN physical layer transport WAN Access network technologies/protocols | Sec. 6.1 & 14.1-14.3 | HW 3 posted |
| 9 | May 22 | WAN switching methods – overview Traffic policing and shaping | Ch. 8 & Ch. 18 Sec. 30.1 & Sec.14.4 Switching methods | HW 3 due |
| 10 | May 29 | WAN switching technologies Next Generation Networking | Reference material to be posted | Lab 2 due |
| 11 | June 5 | Final Exam | | |

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. This course is designed to meet the aforementioned learning outcomes, and I will endeavor to incorporate different activities (e.g., Kinesthetic learning) to improve the learning experience.

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.