

# SYLLABUS

## NET 562

### Computer-Communications Network Design and Analysis Winter Quarter 2023

**Instructor:** Dale Buchholz  
**Office:** CDM 617  
**Office Hours:** Monday: 4:00-5:30 or other times.  
Zoom sessions by appointment only.  
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**Web page:** <https://d2l.depaul.edu> (D2L site)  
**Required Text:** TCP/IP Illustrated, Volume 1, 2<sup>nd</sup> Edition: The Protocols,  
Kevin R. Fall, W. Richard Stevens, Addison-Wesley, 2012  
(text is recommended)

This course provides an in-depth study of Internet protocols from the perspective of network performance, simulation and troubleshooting. The course includes in-depth study of traffic measurement techniques, performance management, network planning and design using simulation and analysis tools. Advanced topics include SDN, NFV, AI and ML as applied to automated intelligent network design.

#### Course Work (homeworks and labs)

Required coursework components will be:

- (a) 6 homework assignments (50 points each—300 total points), including homework problems, Wireshark captures, analysis and measurements; and
- (b) 3 performance labs (50 points each—150 total points).
- (c) 9 assignments at 50 points each results in 450 total available points.
- (d) No makeup or extra credit work.**

Points for each assignment or lab will be included in its description.

Homework assignments and labs must be completed individually. Any students who submit identical solutions or solutions that are clearly copied and modified will lose credit for these components.

Due dates will be included in the homework or lab description. Late homeworks/labs are accepted entirely at the discretion of the instructor and must be negotiated beforehand.

**NET 463 is a prerequisite for this course.** It will be assumed that you already know about Ethernet and IP addressing, subnetting and routing.

## Grades

Your final letter grade is determined by dividing total points earned divided by the total points available yielding a base percentage.

Any curve will be applied to the percentage you have earned and will only work in your favor. Typical curve values in the past have been between 1 and 3 percentage points.

The resulting percentage, i.e., base plus curve, is then mapped into the following table:

Percent	Grade	Percent	Grade
93-100	A	77-79	C+
90-92	A-	73-76	C
87-89	B+	70-72	C-
83-86	B	60-69	D
80-82	B-	< 60	F

## Class Schedule – NET 562 Winter 2022

(January 2, 2023)

<i>Date</i>	<i>Topics</i>	<i>Readings</i>	<i>Assignments</i>
Jan. 2	Introduction, Review of IPv4 and IPv6, ARP and ND, packet capture and analysis	Ch. 1, 2.1-2.5, 4, 5.1-5.4, 8.5 Handouts	HW#0 Attendance due Jan. 9
Jan. 9	ICMP, performance measurement tools. analysis of results.	Ch. 7.1-7.6, 8.1-8.4, 10	
Jan. 16	TCP performance measurement and tuning	Ch. 12, 13.1-13.4, 14, 15, 16	HW #1 due Jan. 22
Jan. 23	More TCP performance management	Handouts	HW #2 due Jan. 29
Jan. 30	Discrete Event Simulation		HW #3 due Feb. 5
Feb. 6	Analytical Models		Lab #1 due Feb. 12
Feb. 13	Basic Queues and Loss Systems	Handouts	HW #4 due Feb. 19
Feb. 20	Queueing Networks		Lab #2 due Feb. 26
Feb. 27	More Queueing Networks		HW #5 due Mar. 5
Mar. 6	Final Recap / Questions		HW #6 due Mar. 12
Mar. 13	No class	<b>All HWs and Labs Due</b>	- Lab #3 due Mar. 16

**Changes to Syllabus:** This syllabus is subject to change as necessary during the quarter. If a change occurs, it will be thoroughly addressed during class, posted under Announcements in D2L and sent via email.

## **Online Course Evaluations**

Evaluations are a way for students to provide valuable feedback regarding their instructor and the course. Detailed feedback will enable the instructor to continuously tailor teaching methods and course content to meet the learning goals of the course and the academic needs of the students. They are a requirement of the course and are key to continue to provide you with the highest quality of teaching. The evaluations are anonymous; the instructor and administration do not track who entered what responses. A program is used to check if the student completed the evaluations, but the evaluation is completely separate from the student's identity. Since 100% participation is our goal, students are sent periodic reminders over three weeks. Students do not receive reminders once they complete the evaluation.

Please see <https://resources.depaul.edu/teaching-commons/teaching/Pages/online-teaching-evaluations.aspx> for additional information.

## **Academic Integrity and Plagiarism**

This course will be subject to the university's academic integrity policy. More information can be found at <https://resources.depaul.edu/teaching-commons/teaching/academic-integrity/Pages/default.aspx>.

## **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: <http://www.cdm.depaul.edu/Current%20Students/Pages/PoliciesandProcedures.aspx>

## **Incomplete Grades**

An incomplete grade is a special, temporary grade that may be assigned by an instructor when unforeseeable circumstances prevent a student from completing course requirements by the end of the term and when otherwise the student had a record of satisfactory progress in the course. All incomplete requests must be approved by the instructor of the course and a CDM Associate Dean. Only exceptions cases will receive such approval. Information about the Incomplete Grades policy can be found at:

<http://www.cdm.depaul.edu/Current%20Students/Pages/Grading-Policies.aspx>

## **Students with Disabilities**

Students seeking disability-related accommodations are required to register with DePaul's Center for Students with Disabilities (CSD) enabling them to access accommodations and support services to assist with their success. There are two office locations:

- Loop Campus (312) 362-8002
- Lincoln Park Campus (773) 325-1677
- Email: [csd@depaul.edu](mailto:csd@depaul.edu)

Students who register with the Center for Students with Disabilities are also invited to contact Dr. Gregory Moorhead, Director of the Center, privately to discuss how he may assist in facilitating the accommodations to be used in a course. This is best done early in the term. The conversation will remain confidential to the extent possible. Please see <https://offices.depaul.edu/student-affairs/about/departments/Pages/csd.aspx> for Services and Contact Information.