

CNT5008 Computer Communication Networks Architecture

Fall 2022

Class description:	Computer networks, layers, protocols and interfaces, local area networks networking.
Student learning outcomes:	By the end of the semester the students will be able to: <ul style="list-style-type: none">• understand the key principles of computer networks and protocol design for the Internet and wireless networks.• understand the tradeoffs and limitations of the different design approaches for network/Internet protocols.• attain improved skills of solving and analyzing network design problems
Instructor:	Dr. Lotzi Bölöni
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Web Site:	http://www.cs.ucf.edu/~lboloni/Teaching/CNT5008_Fall2022/index.html The assignments and the other announcements will be posted on the course web site
Classroom:	HEC 103
Class hours:	Tue, Th 1:30PM - 2:45PM
Office hours:	Tue, Th 6:00PM - 7:30PM See webcourses announcement for Zoom link.
Enrollment requirements:	The class does not depend on the undergraduate computer networks class, however some understanding of computer architecture, such as provided by EEL 4768C is helpful.
Required texts:	There is no required textbook.
Recommended readings:	<ul style="list-style-type: none">• Computer Networking - A Top Down Approach by Kurose and Ross (7th edition)
Grading scale:	<ul style="list-style-type: none">• Grading scale: Letter grades only (A,B,C and F)• Point based grading. The points obtained in all exams are added up for the final score. The grade will be A for 90 and above, B for 80-89, C for 70-79, F for lower than 70.• Points awarded: Midterm 1: 20 points, Midterm 2: 20 points, Homeworks/Projects: 30 points total, Final exam 30 points.• Some midterms, exams and homeworks will have bonus points, but no curve will be applied.• The exams will be administered through ProctorHub, and are open book, open notes.• Make up exams will be given only in justified cases.
Sample exams	Sample Midterm 1 Sample Midterm 2 Sample Final Exam

Note: you should not expect that the new exams will be just variations with different data.

Verification of engagement:

As of Fall 2014, all faculty members are required to document students' academic activity at the beginning of each course. In order to document that you began this course, please complete the following academic activity by the end of the first week of classes, or as soon as possible after adding the course, but no later than August 27. Failure to do so will result in a delay in the disbursement of your financial aid.

To satisfy this requirement, you must finish the first quiz posted online. Log in to Webcourses, choose CNT 5008, and submit your answers online.

Academic integrity

Students should familiarize themselves with UCF's Rules of Conduct at . According to Section 1, "Academic Misconduct," students are prohibited from engaging in

1. Unauthorized assistance: Using or attempting to use unauthorized materials, information or study aids in any academic exercise unless specifically authorized by the instructor of record. The unauthorized possession of examination or course-related material also constitutes cheating.
2. Communication to another through written, visual, electronic, or oral means: The presentation of material which has not been studied or learned, but rather was obtained through someone else's efforts and used as part of an examination, course assignment, or project.
3. Commercial Use of Academic Material: Selling of course material to another person, student, and/or uploading course material to a third-party vendor without authorization or without the express written permission of the university and the instructor. Course materials include but are not limited to class notes, Instructor's PowerPoints, course syllabi, tests, quizzes, labs, instruction sheets, homework, study guides, handouts, etc.
4. Falsifying or misrepresenting the student's own academic work.
5. Plagiarism: Using or appropriating another's work without any indication of the source, thereby attempting to convey the impression that such work is the student's own.
6. Multiple Submissions: Submitting the same academic work for credit more than once without the express written permission of the instructor.
7. Helping another violate academic behavior standards.
8. Soliciting assistance with academic coursework and/or degree requirements.

Responses to Academic Dishonesty, Plagiarism, or Cheating

Students should also familiarize themselves with the procedures for academic misconduct in UCF's student handbook, The Golden Rule . UCF faculty members have a responsibility for students' education and the value of a UCF degree, and so seek to prevent unethical behavior and respond to academic misconduct when necessary. Penalties for violating rules, policies, and instructions within this course can range from a zero on the exercise to an "F" letter grade in the course. In addition, an Academic Misconduct report could be filed with the Office of Student Conduct, which could lead to disciplinary warning, disciplinary probation, or deferred suspension or separation from the University through suspension, dismissal, or expulsion with the addition of a "Z" designation on one's transcript. Being found in violation of academic conduct standards could result in a student having to disclose such behavior on a graduate school application, being removed from a leadership position within a student organization, the recipient of scholarships, participation in

University activities such as study abroad, internships, etc. Let's avoid all of this by demonstrating values of honesty, trust, and integrity. No grade is worth compromising your integrity and moving your moral compass. Stay true to doing the right thing: take the zero, not a shortcut.

Unauthorized Use of Websites and Internet Resources There are many websites claiming to offer study aids to students, but in using such websites, students could find themselves in violation of academic conduct guidelines. These websites include (but are not limited to) Quizlet, Course Hero, Chegg Study, and Clutch Prep. UCF does not endorse the use of these products in an unethical manner, which could lead to a violation of our University's Rules of Conduct. They encourage students to upload course materials, such as test questions, individual assignments, and examples of graded material. Such materials are the intellectual property of instructors, the university, or publishers and may not be distributed without prior authorization. Students who engage in such activity could be found in violation of academic conduct standards and could face course and/or University penalties. Please let me know if you are uncertain about the use of a website so I can determine its legitimacy.

Unauthorized Distribution of Class Notes Third parties may attempt to connect with you to sell your notes and other course information from this class. Distributing course materials to a third party without my authorization is a violation of our University's Rules of Conduct. Please be aware that such class materials that may have already been given to such third parties may contain errors, which could affect your performance or grade. Recommendations for success in this course include coming to class on a routine basis, visiting me during my office hours, connecting with the Teaching Assistant (TA), and making use of the Student Academic Resource Center (SARC), the University Writing Center (UWC), the Math Lab, etc. If a third party should contact you regarding such an offer, I would appreciate your bringing this to my attention. We all play a part in creating a course climate of integrity.

In-class recording

Students may, without prior notice, record video or audio of a class lecture for a class in which the student is enrolled for their own personal educational use. A class lecture is defined as a formal or methodical oral presentation as part of a university course intended to present information or teach enrolled students about a particular subject. Recording class activities other than class lectures, including but not limited to lab sessions, student presentations (whether individually or part of a group), class discussion (except when incidental to and incorporated within a class lecture), clinical presentations such as patient history, academic exercises involving student participation, test or examination administrations, field trips, private conversations between students in the class or between a student and the faculty member, and invited guest speakers is prohibited. Recordings may not be used as a substitute for class participation and class attendance, and may not be published or shared without the written consent of the faculty member. Failure to adhere to these requirements may constitute a violation of the University's Student Code of Conduct as described in the Golden Rule.

Course accessibility:

The University of Central Florida is committed to providing access and inclusion for all persons with disabilities. Students with disabilities who need access to course content due to course design limitations should contact the professor as soon as possible. Students should also connect with [Student Accessibility Services](#) (Ferrell Commons 185, sas@ucf.edu, phone 407-823-

2371). For students connected with SAS, a Course Accessibility Letter may be created and sent to professors, which informs faculty of potential course access and accommodations that might be necessary and reasonable. Determining reasonable access and accommodations requires consideration of the course design, course learning objectives and the individual academic and course barriers experienced by the student. Further conversation with SAS, faculty and the student may be warranted to ensure an accessible course experience.

Campus safety statement:	<p>Emergencies on campus are rare, but if one should arise during class, everyone needs to work together. Students should be aware of their surroundings and familiar with some basic safety and security concepts.</p> <ul style="list-style-type: none"> • In case of an emergency, dial 911 for assistance. • Every UCF classroom contains an emergency procedure guide posted on a wall near the door. Students should make a note of the guide's physical location and review the online version at https://centralflorida-prod.modolabs.net/student/safety/index. • Students should know the evacuation routes from each of their classrooms and have a plan for finding safety in case of an emergency. • If there is a medical emergency during class, students may need to access a first-aid kit or AED (Automated External Defibrillator). To learn where those are located, see https://ehs.ucf.edu/automated-external-defibrillator-aed-locations. • To stay informed about emergency situations, students can sign up to receive UCF text alerts by going to https://my.ucf.edu and logging in. Click on "Student Self Service" located on the left side of the screen in the toolbar, scroll down to the blue "Personal Information" heading on the Student Center screen, click on "UCF Alert", fill out the information, including e-mail address, cell phone number, and cell phone provider, click "Apply" to save the changes, and then click "OK." • Students with special needs related to emergency situations should speak with their instructors outside of class. • To learn about how to manage an active-shooter situation on campus or elsewhere, consider viewing this video https://youtu.be/NIKYajEx4pk.
Deployed active duty military students	<p>If you are a deployed active duty military student and feel that you may need a special accommodation due to that unique status, please contact your instructor to discuss your circumstances.</p>

Syllabus

Date	Topic	Lecture Notes, Readings, Homeworks
Tue., Aug. 23	<p>Introduction</p> <ul style="list-style-type: none"> • What is the internet? • Protocols 	<p>[slides] 01 - Introduction</p>

Date	Topic	Lecture Notes, Readings, Homeworks
Introduction (cont'd)		
Thu., Aug. 25	<ul style="list-style-type: none"> • Network edge • Network core • Delay, loss, throughput 	
Introduction (cont'd)		
Tue., Aug. 30	<ul style="list-style-type: none"> • Protocol layers, service models • Security • History 	
Thu., Sep. 1	No class due to UCF football game.	
The application layer		
Tue., Sep. 6	<ul style="list-style-type: none"> • Application layer protocol features • The world wide web: HTTP • Email: SMTP 	[slides] 02-ApplicationLayer
The application layer (cont'd)		
Thu., Sep. 8	<ul style="list-style-type: none"> • The domain name system (DNS) 	
The transport layer		
Tue., Sep. 13	<ul style="list-style-type: none"> • Multiplexing and demultiplexing • UDP 	[slides] 03-TransportLayer
The transport layer(cont'd)		
Thu., Sep. 15	<ul style="list-style-type: none"> • Creating a reliable communication channel 	
The transport layer(cont'd)		
Tue., Sep. 20	<ul style="list-style-type: none"> • Go-back N • Selective retransmission 	
Thu., Sep. 22		
The transport layer(cont'd)		
Tue., Sep. 27	<ul style="list-style-type: none"> • TCP segment structure • TCP reliable data transfer • TCP flow control • TCP connection management • TCP congestion control 	
Thu., Sep. 29	Midterm 1 (intro+app+transport layer)	
Tue., Oct. 4		

Date	Topic	Lecture Notes, Readings, Homeworks
Thu., Oct. 6	The network layer - the data plane	[slides] 04-NetworkLayer-DataPlane
Tue., Oct. 11	The network layer - the data plane (cont'd)	
Thu., Oct. 13	No class due to UCF football game.	
Tue., Oct. 18	The network layer - the control plane	[slides] 05-NetworkLayer-ControlPlane
Thu., Oct. 20	The network layer - the control plane (cont'd)	
Tue., Oct. 25	The link layer	[slides] 06-LinkLayer
	The link layer (cont'd)	
Thu., Oct. 27	<ul style="list-style-type: none"> • Ethernet • Switching 	
Tue., Nov. 1	Midterm 2 (network+link layer)	
Thu., Nov. 3	The link layer (cont'd)	
Tue., Nov. 8		
Thu., Nov. 10		
Tue., Nov. 15		
	The link layer (cont'd)	
Thu., Nov. 17	<ul style="list-style-type: none"> • Switches • VLANs • MPLS • A day in the life of a web request 	
	Wireless networks	
Tue., Nov. 22	<ul style="list-style-type: none"> • Elements of wireless networks • Spectrum consideration • CDMA 	[slides] 07-WirelessNetworks
Thu., Nov. 24	Thanksgiving break - no class	
	Wireless networks (cont'd)	
Tue., Nov. 29	<ul style="list-style-type: none"> • 802.11 WiFi intro • CSMA/CA 	
	Wireless networks (cont'd)	
Thu., Dec. 1	<ul style="list-style-type: none"> • Addressing in 802.11 WiFi intro 	

Date	Topic	Lecture Notes, Readings, Homeworks
Dec. 7	Final exam Tuesday, December 6, 2022 1:00 PM - 3:50 PM	