Syllabus

This page contains the syllabus for Computer Networks for Fall 2018.

CNT 4004 - Computer Networks - 3 credits
Fall 2018
Class meeting time and location: Tuesday and Thursday, 3:30pm to 4:45pm in EDU 347

Class website: http://www.csee.usf.edu/~christen/class2/class2.html

Instructor: Dr. Ken Christensen
Department: Computer Science and Engineering
Office Location: ENB 319
Office Hours: Monday and Wednesday, 3:30pm to 5:30pm. Or, email to schedule an appointment.
Email: christen@csee.usf.edu
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Department: Computer Science and Engineering
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Required Textbook: *Computer Networking: A Top-Down Approach*, 7th edition, by James Kurose and Keith Ross (ISBN-13: 978-0133594140). Cost is $139.99 from Amazon Prime (as of July 28, 2018).

Course Description (from 2017-2018 catalog): CNT 4004 Computer Networks I (3) EN ESB PR: COP 3331 CPR: COP 4530 An introduction to the design and analysis of computer communication networks. Topics include application layer protocols, Internet protocols, network interfaces, local and wide area networks, wireless networks, bridging and routing, and current topics.

Prerequisites: The prerequisite for this class is successful completion of Object Oriented Design (COP 3331). Note that Data Structures (COP 4530) is a co-prerequiste.

Course Objectives: As a result of successfully completing this course, students will:

1. Become familiar with layered communication architectures (OSI and TCP/IP).
2. Understand the client/server model and key application layer protocols.
3. Learn sockets programming and how to implement client/server programs.
4. Understand the concepts of reliable data transfer and how TCP implements these concepts.
5. Know the principles of congestion control and trade-offs in fairness and efficiency.
6. Learn the principles of routing and the semantics and syntax of IP.
7. Understand the basics of error detection including parity, checksums, and CRC.
8. Know the key protocols for multimedia networking including IntServ and DiffServ for IP.

9. Familiarize the student with current topics such as security, network management, sensor networks, and/or other topics.

Course Topics: This course will cover the following topics:

- Week 1: Protocol layers and service models. OSI and Internet protocols.
- Week 2: What is the Internet. Concepts of delay, security, and Quality of Service (QoS).
- Week 3: Application layer protocols and client-server model.
- Week 4: Sockets programming in C (client-server and web server programs).
- Week 5: Reliable data transfer. Stop-and-Go evaluation. TCP and UDP semantics and syntax.
- Week 6: TCP RTT estimation. Principles of congestion control.
- Week 7: Security. Overview of threats, cryptography, authentication, and firewalls. Discussion of project.
- Week 8: Principles of routing. Link-state and distance vector. IP semantics and syntax.
- Week 9:Link-state and distance vector routing. Midterm Exam.
- Week 10: Link layer. Error detection. Multiple access protocols. IEEE 802.3 Ethernet.
- Week 11: Switching and bridging. Media. Signal strength. Data encoding.
- Week 12: Wireless and mobile networks.
- Week 13: Network management including SNMP. Network troubleshooting. Hot topics such as SDN and IoT.
- Week 14: Hot topics such as SDN and IoT (continued). Course wrap-up.
- Week 15: Review for comprehensive final exam.
- Week 16: Comprehensive final exam

Detailed Course Outline: A detailed course outline that includes chapter reading suggestions, assignment and project deadlines, and exam dates is here, http://www.csee.usf.edu/~christen/class2/outline2.html.

Grading: Students will earn a grade based on assignments, project, midterm exam, and comprehensive final exam. The grade breakdown is:

- Assignments: 15% (seven assignments - lowest grade dropped - due on 08/30/18, 09/13/18, 09/27/18, 10/11/18, 11/01/18, 11/15/18, and 11/27/18 at the beginning of class)
- Project: 25% (due on 11/26/18 by 8pm for maximum 110% grade, 11/27/18 by 8pm for maximum 105% grade, or 11/28/18 by 8pm for maximum 100% grade)
- Midterm exam: 25% (held on 10/18/18)
- Final exam: 35% (held on 12/06/18 at 12:30pm per the University final exam matrix)

The grading scale is "no worse than" (there are no "+" or "-" grades) the below. Grade cut-offs may be adjusted downwards at the discretion of the instructor.

- A = 90% through 100%
- B = 80% through 89%
- C = 70% through 79%
- D = 60% through 69%
- F = Less than 60%

Course Policies:

- If you must submit work late you need to talk to me at least *one-week before* the due date in question. Otherwise, late work cannot be accepted except in cases of verifiable emergencies.

- Please do not record lectures in any way. Thanks!

- Out of courtesy to other students and to me, please make sure that you turn off, or place in silent mode, your cell phone.

Academic Integrity/Academic Dishonesty:

- I expect students to be honest and not cheat on their assignments, project, or exams. Students may work together on the project with one other person in the class - student pairs must submit one copy of the project with both names on it. Both students will earn the same grade. The assignments and exams must be completed without giving or accepting assistance from other students. Any source code copied from another source must be credited as such. Open source software used must maintain all headers and other information as required by the Open source license used. I expect you to know the University's policies on student conduct, academic dishonesty, etc. Please see the University's Undergraduate Catalog regarding these policies. Students found cheating in any form may receive an FF grade for the course.

- The ACM code of ethics is http://www.acm.org/about/code-of-ethics and the ACM definition of plagiarism is http://www.acm.org/publications/policies/plagiarism_policy. Read these documents. Be sure that you fully understand the contents of these documents. Do not hesitate to ask questions on anything you do not understand.

USF Required Statements:

- **Academic Integrity of Students:** Academic integrity is the foundation of the University of South Florida System's commitment to the academic honesty and personal integrity of its university community. Academic integrity is grounded in certain fundamental values, which include honesty, respect, and fairness. Broadly defined, academic honesty is the completion of all academic endeavors and claims of scholarly knowledge as representative of one's own efforts. The final decision on an academic integrity violation and related academic sanction at any USF System institution shall affect and be applied to the academic status of the student throughout the USF System, unless otherwise determined by the independently accredited institution.

- **Disruption to Academic Process:** Disruptive students in the academic setting hinder the educational process. Disruption of the academic process is defined as the act, words, or general conduct of a student in a classroom or other academic environment which in the reasonable estimation of the instructor: (a) directs attention away from the academic matters at hand, such as noisy distractions, persistent, disrespectful or abusive interruption of lecture, exam, academic discussion, or general University operations, or (b) presents a danger to the health, safety, or well-being of self or other persons.

- **Student Academic Grievance Procedures:** The purpose of these procedures is to provide all undergraduate and graduate students taking courses within the University of South Florida System an opportunity for objective review of facts and events pertinent to the cause of the academic grievance. An "academic grievance" is a claim that a specific academic decision or action that affects that student's academic record or status has violated published policies and procedures, or has been applied to the grievant in a manner different from that used for other students.

- **Disability Access:** Students with disabilities are responsible for registering with Students with Disabilities Services (SDS) in order to receive academic accommodations. SDS encourages students to notify instructors of accommodation needs at least 5 business days prior to needing the accommodation. A letter from SDS must accompany this request.

- **Sexual Misconduct/Sexual Harassment Reporting:** USF is committed to providing an environment free from sex discrimination, including sexual harassment and sexual violence (USF System Policy 0-004). The USF Center for Victim Advocacy and Violence Prevention is a confidential resource where you can talk about incidents of sexual harassment and gender-based crimes including sexual assault, stalking, and domestic/relationship violence. This confidential resource can help you without having to report your situation to either the Office of Student Rights and Responsibilities (OSSR) or the Office of Diversity, Inclusion, and Equal Opportunity (DIEO), unless you request that they make a report. Please be aware that in compliance with Title IX and under the USF System Policy, educators must report incidents of sexual harassment and gender-based crimes including sexual assault, stalking, and domestic/relationship violence. If you disclose any of these situations in class, in papers, or to me personally, I am required to report it to OSSR or DIEO for investigation. Contact the USF Center for Victim Advocacy and Violence Prevention: (813) 974-5757.

Document history:

1. August 18, 2018 - Genesis.
2. August 22, 2018 - Corrected final exam date.

Last update on August 18, 2018