Cosumnes River College
ITIS 150 / CISN 304
Networking Technologies
An Online Course
Fall 2021 8w2

Instructor: Kur Song   **Online Office Hours**: Mondays 5:00-6:00 p.m. (Aug. 14 to Dec. 10)
Phone: (916) 238-8581
E-mail: songk@crc.losrios.edu Email correspondence typically allows me to answer your questions most efficiently. Please put your name and your course in the subject line of emails to me.
Example: Subject: CISN304 Brad Johnson-Homework 1 help.

Instructor: Buddy Spisak   **Online Office Hours**: Thursdays 6:00-8:00 p.m. (Aug. 14 to Dec. 10)
Office: BS-157   Tuesdays/Thursdays 1:30 to 2:30 pm
Voice Mail: (916) 691-7062
E-mail: spisakj@crc.losrios.edu The turnaround time for responding to most e-mails is about one to two days. Be sure to include your name and the course number in each e-mail so I can identify who you are and what the e-mail is about.
Course Web page: https://lrccd.instructure.com
Instructor Web page: http://crc.losrios.edu/spisakj/

Prerequisites: None
Advisory: CISC 310
Lecture/Lab: Fully online (19737) Mondays 6 to 8 p.m.

Accepted for Credit: CSU
Class Credits: 3 units

Textbook: No textbook is required for this course. All materials are available via the Cisco Networking Academy website at www.netacad.com. Note: There are two suggested textbooks that can be purchased at the college bookstore or online (e.g., through *Amazon.com*).
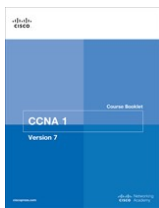
Optional textbook: *Introduction to Networks Course Booklet*, version 7
Authors: Cisco Networking Academy
Publishing Info.: Cisco Press, 2020
ISBN-10: 0-13-663295-5
ISBN-13: 978-0-13-663295-5

Optional textbook: *Introduction to Networks Labs & Study Guide,* version 7
Author: Allan Johnson
Publishing Info.: Cisco Press, 2020
ISBN-10: 0-13-663445-1
ISBN-13: 978-0-13-663445-4

Labs: Some labs are done through NDG Netlab+ at https://netlabve10.coastline.edu.

Resource Materials: CISCO Network Academy Curriculum

Supplies: Ear buds or a headset could be beneficial when listening to videos.
          A flash drive is recommended (at least 16GB, but 32GB is preferred) to store your work for
          the class**.**

Course Description:

This course introduces the architecture, structure, functions, components, and models of the Internet and other computer networks. The principles and structure of IP (Internet Protocol) addressing, and the fundamentals of Ethernet concepts, media, and operations are introduced to provide a foundation for further study of computer networks. It uses the OSI (Open Systems Interconnection) and TCP (Transmission Control Protocol) layered models to examine the nature and roles of protocols and services at the application, network, data link, and physical layers. Preparation for the CompTIA Network+ certification exam. C-ID: ITIS 150

Student Learning Outcomes and Course Objectives:

Upon completion of this course, the student will be able to:

- IDENTIFY THE PURPOSE AND FUNCTION OF THE MOST WIDELY USED PROTOCOLS (SLO #01).
  - o List the services provided by network protocols.
  - o Describe how protocols enable networked computers to communicate.
- IDENTIFY THE LAYERS OF THE OSI MODEL (SLO #02).
  - o Describe the functions associated with each of the OSI model layers.
- LIST THE CABLING TOPOLOGIES USED TO BUILD LOCAL AREA NETWORKS (SLO #03).
  - o Name the types of cables used to build LANs.
  - o List the grading systems used for the various cable types.
  - o Describe how to install cables externally, secure them in place, and run them around common obstacles.
  - o Explain the steps involved in an internal cable installation.
  - o Describe the wiring of a crossover cable.
- DESCRIBE THE FUNCTION OF TYPICAL NETWORKING HARDWARE (SLO #04).
  - o Associate the importance of the troubleshooting process with a network interface adapter.
  - o Describe the difference between a hub, switch and a router. Understand the functions of each.
- LIST THE ETHERNET PHYSICAL LAYER STANDARDS (SLO #05).
  - o Describe the functions of the Ethernet frame.
  - o List the physical layer options for Token Ring networks.
  - o Distinguish between the various types of FDDI network connections.
- DESCRIBE THE FUNCTIONS OF THE INTERNET PROTOCOL (IP) PROTOCOL AND THE VARIOUS IP HEADER FIELDS (SLO #06).
  - o Summarize the basics of IP addressing, routing, and fragmentation.
  - o Describe the functions of the Internetwork Packet Exchange (IPX) protocol and the various IPX header fields.
  - o List the function of the Address Resolution Protocol (ARP).
  - o Describe the functions of the Internet Control Message Protocol (ICMP).
  - o Describe the properties of TCP/IP's application layer protocols.
- IDENTIFY THE FUNCTIONS OF A ROUTER AND DESCRIBE THE INFORMATION IN A ROUTING TABLE (SLO #07).
  - o Distinguish between static and dynamic routing.
  - o Create a static route in a routing table.
  - o Explain the operation of routing protocols.
- IDENTIFY HOW TO CONFIGURE TCP/IP CLIENT PARAMETERS ON AN OPERATING SYSTEM (SLO #08).
  - o Describe the basic networking capabilities of the Windows, Novell NetWare, UNIX/Linux, and Apple Macintosh operating systems.
  - o Describe the client capabilities of the major operating systems.
  - o Identify the directory services provided with major operating systems.

- o Explain how Dynamic Host Configuration Protocol (DHCP) assigns TCP/IP configuration settings to workstations.
- SUMMARIZE THE MECHANISMS USED TO MAKE NETWORK DATA CONTINUOUSLY AVAILABLE (SLO #09).
    - o Describe how clustering ensures the constant availability of vital network servers.
    - o Report how to use redundant equipment to provide fault-tolerant network communications.
    - o Describe the types of hardware used to perform backups.
    - o Outline the capabilities of software backup products.
    - o Distinguish among full, incremental, and differential backups.
- DESCRIBE THE TYPES OF TECHNOLOGIES USED TO CONNECT REMOTE COMPUTERS TO NETWORKS (SLO #10).
    - o Describe the characteristics of a leased line.
    - o Express how frame relay provides flexible wide area networks (WAN).
    - o Describe the characteristics of the Asynchronous Transfer Mode (ATM) protocol.
    - o Describe the Serial Line Internet Protocol (SLIP) and Point-to-Point Protocol (PPP) frame formats.
- LIST THE TOOLS USED TO MONITOR SYSTEM AND NETWORK PERFORMANCE IN THE MAJOR NETWORK OPERATING SYSTEMS (SLO #11).
    - o Describe the troubleshooting functions of crossover cables and loopback connectors.
    - o List the capabilities of more elaborate cable testing equipment.
    - o Describe the process of isolating the source of a network problem.
    - o Distinguish among network problems, computer problems, and user problems.

**Methods of Measuring Student Learning Outcomes:**

- You will demonstrate knowledge of course concepts through class discussions and achievement on quizzes and a final examination.

- You will demonstrate competence in the coursework by completing lab work and participating in discussions during the semester.

Student Obligations:

- **Attendance**: Since this course is online, it is important to participate frequently in the class.
- **Late Work**: Unless noted all assignments are due on Sunday by midnight each week. Late work will be accepted ONLY if you have contacted me prior to the due date either by e-mail or voice mail. In general, late work is due the next week, and no late assignments may be turned in after one week from the original due date regardless of the reason. For every day an assignment is late, you will lose 10% of its grade.
- **Due Dates**: Unless noted, all assignments will be submitted in Canvas. If, for any reason, you cannot access Canvas or are unable to submit the assignment on time, please e-mail it to me instead so that you are not penalized for being late. Quizzes and the discussion items cannot be taken past their due dates. If you miss a quiz and you want to make up points, you can take advantage of the extra credit assignments posted in Canvas. Everyone is welcome to work on the extra credit assignments. Typically, they are five to ten points each, depending on the difficulty of the assignment.
- **Labs**: There will be seven labs credited for homework for the class. The due dates are in the **SCHEDULE** portion of this handout. We will spend a lot of time working on lab activities. Each lab has a set of review questions that you will need to answer in Canvas to receive points for that assignment.
- **Discussions**: I want everyone to take a pro-active approach to learning this material. This includes using the discussion feature in Canvas to ask questions and answer other students' questions. I will also post questions each week that you can answer to further your understanding of the material. I expect two postings each week unless otherwise noted.

- **Language Matters:** Part of communicating effectively with one another involves communicating correctly with one another. This is not an English class; however, I will be looking at and commenting on the basic accuracy of your written English, such as sentence boundaries, spelling, and other basic grammar issues. While you will not fail the class because of your English, you may lose some points for frequent and repeated errors. Keep in mind that your use of English can influence your readers positively—or negatively.
- **Skills Exam and Final Exam**: These exams will be administered through Canvas.
- **Plagiarism Policy**: It is inappropriate, and a violation of academic policy, to copy information from any source (including, but not limited to, textbooks, magazine articles, newspaper articles and internet articles) without giving proper credit to the author by using standard quotation procedures such as in-line quotes, footnotes, endnotes, etc. Quotes may not exceed 25% of the assignment's total length. You will receive no credit (0 points) for any assignment that copies any material from any other source without giving proper credit to the author(s). Repeat offenders of this policy are subject to academic discipline as outlined in the policies published by the college.
- **Cheating:** Students who cheat will receive a failing grade for the course. (See the Student Behavior and Academic Integrity page of the college website (https://crc.losrios.edu/about-us/our-values/student-rights-and-responsibilities/student-standards-of-conduct.)
- **CRC Honor Code:** Academic integrity requires honesty, fairness, respect, and responsibility. [See the Cosumnes River College Honor Code posted on the college website (https://crc.losrios.edu/about-us/our-values/student-rights-and-responsibilities/student-honor-code)].
- **E-mail:** Every student will be required to have an email account. If you do not have an email account, the college provides free email accounts for all current students. To activate your account, go to https://sso.losrios.edu then choose the option for *Expired/Forgotten Password* and then *Initial Password and Security Questions Setup*. Now, follow the directions provided.
- **E-mail etiquette:** I will not tolerate rude and demeaning comments or e-mails to anyone in this class. Please keep your comments and e-mails topic-related. If I determine that a comment or e-mail to anyone else in the class is rude or demeaning, I will warn you once. If your behavior continues to be unacceptable, I will refer you to the administration of the college for disciplinary action.
- **Personal belongings:** All cell phones, beepers, pagers, etc. should be turned off or set to vibrate during any of the online lectures/labs.
- **Disabilities:** If you have a documented disability and wish to discuss academic accommodations, please contact me or contact the Office of Disabled Student Programs and Services at 916-691-7275 as soon as possible.
- **Canvas:** This class utilizes a product called "Canvas." It is highly recommended that you check the website frequently for scheduling updates and homework assignments. Most of the homework assignments and quizzes will be done on Canvas.
- **Online Course Responsibilities:** This course requires significant self-motivation. You must not get behind. Labs and weekly assignments can take up to 4 hours to finish. Please don't try to finish them in one day. Not all activities are created equal. Some may take a bit longer than others. You would normally spend 5.5 hours per week in class for this course: total of 162 hours. Allow yourself at least 9 hours per week to complete the activities online, including the time spent writing the class discussion postings. You should plan additional time to read the textbook and study for the quizzes. Some people believe that an on-line format provides a much easier way to study this subject than an on-campus framework because they love to read and avoid the parking problems. Others feel very intimidated at first. Be patient as you work your way through the activities.

Grading:
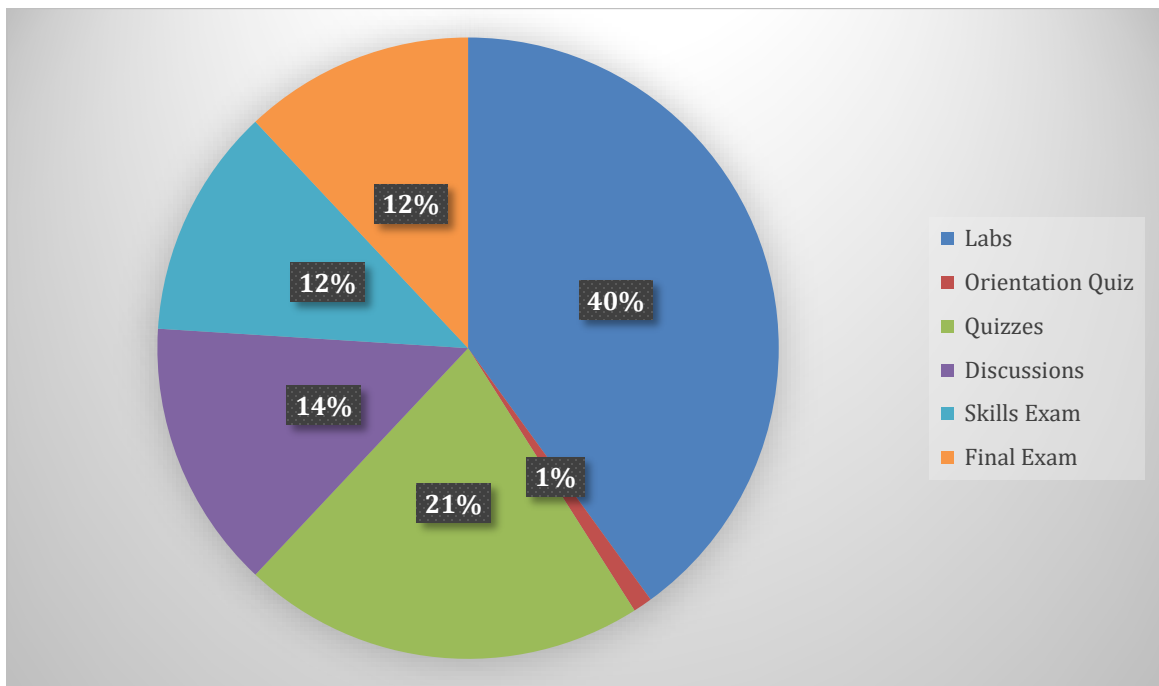
Course Topic	Points	Total	Approximate % the of Grade
Labs (7)	50	350	40
Orientation Quiz (1)	10	10	1
Quizzes (6)	30	180	21
Discussions (6)	20	120	14
Skills Exam (1)	100	100	12
Final Exam (1)	100	100	12

Point System: There are 860 total assigned points.

Grade Ranges: A=774-860, B=688-773, C=602-687, D=516-601, F=0-515

Schedule: It is tentative and can change during the term. All changes will be located under the "Announcements" section in Canvas for the course.

	Day:		Lecture/Lab Schedule:	Assignment Due:	Due Date (By Midnight):
Week 1	Mon.	10/18	Orientation and Introductions	View the Online Orientation	Sun., Oct. 24
			Chapter 1: Networking Today	Orientation Disc.	
			Chapter 2: Basic Switch and End Device Configuration	Orientation Quiz	
			Chapter 3: Protocols and Models		
			Lab #1		
Week 2	Mon.	10/25	Chapter 4: Physical Layer	Disc. #1 (Ch. 1-3)	Sun., Oct. 31
			Chapter 5: Number Systems	Lab Review #1	
			Lab #2	Quiz #1 (Ch. 1-3)	
Week 3	Mon.	11/1	Chapter 6: Data Link Layer	Disc. #2 (Ch. 4-5)	Sun., Nov. 7
			Chapter 7: Ethernet Switching	Lab Review #2	
			Chapter 8: Network Layer	Quiz #2 (Ch. 4-5)	
			Lab #3		
Week 4	Mon.	11/8	Chapter 9: Address Resolution	Disc. #3 (Ch. 6-8)	Sun., Nov. 14
			Chapter 10: Basic Router Configuration	Lab Review #3	
			Lab #4	Quiz #3 (Ch. 6-8)	
Week 5	Mon.	11/15	Chapter 11: IPv4 Addressing	Disc. #4 (Ch. 9-10)	Sun., Nov. 21
			Chapter 12: IPv6	Lab Review #4	
			Chapter 13: ICMP	Quiz #4 (Ch. 9-10)	
			Lab #5		
Week 6	Mon.	11/22	Chapter 14: Transport Layer	Disc. #5 (Ch. 11-13)	Sun., Nov. 28
			Chapter 15: Application Layer	Lab Review #5	
			Lab #6	Quiz #5 (Ch. 11-13)	
Week 7	Mon.	11/29	Chapter 16: Network Security Fundamentals	Disc. #6 (Ch. 14-15)	Sun., Dec. 5
			Chapter 17: Build a Small Network	Lab Review #6	
			Lab #7	Quiz #6 (Ch. 14-15)	
Week 8	Mon.	12/6	Skills Exam	Lab Review #7	Fri., Dec. 10
			Final Exam (Chapters 1-17)		
			What is next after this class? meeting	Skills Exam Final Exam	All work needs to be turned in Fri., Dec. 10