Capital Community College

950 Main Street, Hartford,
CT 06103

CST 281–CRN 1236
Data Com and Networking II

INSTRUCTOR INFORMATION

Instructor: Saaid Elhadad

Communication with Your Instructor:

E-mail Address: Selhadad@ccc.commnet.edu
Office Phone: 860-906-5135
Office Hours: Monday & Wednesday 2:00pm – 4:00pm
Other days by appointment
11th Floor Room 1116

COURSE DESCRIPTION

COURSE CATALOG DESCRIPTION:

This course (part 2 of 3) continues where CST*231, Data Communications & Networking I, leaves off. The student progresses beyond the basics of communications networks and network configurations and gets into the study of actual networks and network hardware and software. Hands-on experience is obtained as each student networks two PC systems both in and across LANs. With this foundation knowledge, the student will be well prepared for the study of Management Information Systems (MIS). *Formerly listed as CIS 299, not open to students who have successfully completed CIS 299.*

TEXT & MATERIALS

CCNA Routing and Switching Portable Command Guide, 3rd Edition
ISBN- SBN-10: 1-58720-430-4 ISBN-13: 978-1-58720-430-2

Project Files and Programs: Available on netacad.com

Extra Reading: Additional reading assignments may be provided during the course.

Supplies: You will need a portable USB, Desktop or Laptop with enough resources to support virtualization, and reliable access to the Internet.

TEACHING METHODS

Lectures/Demonstrations: Important information and highlights will be discussed within each lesson. Notes for course content and topic review, interactive discussions, and computer demos are some examples of instructional materials that may be used.

Assignments/Labs: There will be assignments for each lesson throughout the course. Additional information will be provided as needed.

Exams: There will be several exams given throughout the course. Additional information will be provided as needed.

ASSIGNMENT POLICIES

Due Dates and Grace Periods: You are responsible for the submission of all assignments for each lesson by the assigned due date. Assignment submission should be in step with the due dates listed in the course assignment schedule. Assignments may be turned in prior to due dates posted however; to receive full credit for an assignment it must be turned in by the due date listed. For late assignments, there is a two-week grace period from the due date to submit your assignments. ***Late assignment will incur a 1% reduction in the grade per each day, late Midterm and final exams are will result in 25% per each day.***

Academic Dishonesty: Capital takes plagiarism and cheating very seriously. Such offenses may be punished by failure on a quiz or project, failure in the course, and/or expulsion from the college. Visit the following site for detailed information on plagiarism: http://www.ccc.commnet.edu/mla/plagiarism.shtml. For more information on policies and consequences, refer to the College Student Handbook.

ATTENDANCE POLICY

Students are encouraged to participate every week in all assignments and activities.

Students wishing to withdrawal from this class must go to the Registrar's Office and fill out the proper withdrawal form by the posted deadline. Not following proper withdrawal procedures will lead to a failing grade in the course.

STUDENTS WITH SPECIAL NEEDS STATEMENT

CCC is committed to providing access and full participation to students with special needs in all areas of its academic programs and services.

Students with special needs should:

- Meet with the Learning Disabilities Specialist at least thirty (30) days prior to the beginning of each semester.
- Self-identify & provide documentation of their specific disability.
- Can identify **reasonable** accommodation to be successful academically.

SEXUAL VIOLENCE AWARENESS POLICY

Capital Community College (CCC) is committed to ensuring that our campus community, both virtual and on grounds, is safe and supportive of people of all genders and sexual identities. CCC has zero tolerance for sexual misconduct. Sexual misconduct includes sexual harassment, sexual assault and intimate partner violence. A variety of support resources are available on campus and in the community to assist in dealing with sexual violence. These resources are available whether or not the incident occurred on campus or off campus. For support and information on available options the following contact list is provided.

Doris Arrington, Dean of Students …… …860-906-5086

Rita Kelley, Title IX Coordinator……860-906-5133

James Griffin, Master Sergeant Public Safety…….860-906-5076

Sabrina Adams-Roberts, Lead Counselor……860-906-5043

NEASC CREDIT HOUR POLICY

The US Department of Education has enacted regulations regarding program integrity that include a federal definition of a credit hour:

Federal Definition and Commission Review of the Credit Hour

As an accreditor recognized by the U.S. Secretary of Education, the Commission is obliged to follow federal law and regulations pertinent to that recognition. Federal regulation defines a credit hour as an amount of work represented in intended learning outcomes and verified by evidence of student achievement that is an institutional established equivalence that reasonably approximates not less than –

(1) One hour of classroom or direct faculty instruction and a minimum of two hours of out of class student work each week for approximately fifteen weeks for one semester or

trimester hour of credit, or ten to twelve weeks for one quarter hour of credit, or the equivalent amount of work over a different amount of time; or

(2) At least an equivalent amount of work as required in paragraph (1) of this definition for other academic activities as established by the institution including laboratory work, internships, practicum, studio work, and other academic work leading to the award of credit hours.

In accordance with federal policy, CCC defines a credit hour as the amount of work represented in the achievement of student learning outcomes (verified by evidence of student achievement) that reasonably approximates one hour (50 minutes) of classroom instruction and a minimum of two hours of out-of-class student work. For every course credit hour, a typical student should expect to spend at least two hours per week of concentrated attention on course-related work including, but not limited to, class meeting time, reading, reviewing, organizing notes, studying and completing assignments.

E. OBJECTIVES, OUTCOMES, and ASSESSMENT

Students' grades will be based on achievement of learning the objectives and outcomes listed below as measured by the instructor's methods of assessment:

LEARNING OBJECTIVES	**LEARNING OUTCOMES**
To demonstrate an understanding of:	**Student will:**
Introduction to Switched Networks	a. Converged Networks Switched b. Networks c. Frame Forwarding d. Switching Domains
Basic Switching Concepts and Configuration	a. Basic Switch Configuration b. Configure Switch Ports c. Switch Security: Management and d. Implementation
VLANs	a. VLAN Segmentation b. VLANs in a Multiswitched Environment c. VLAN Implementations d. VLAN Trunks e. Dynamic Trunking Protocol f. VLAN Security and Design Troubleshoot g. VLANs and Trunks
Routing Concepts	a. Functions of a Router b. Connect Devices c. Basic Settings on a Router d. Verify Connectivity of Directly Connected e. Networks f. Switching Packets Between Networks g. Path Determination
Inter-VLAN Routing	a. Inter-VLAN Routing Configuration b. Configure Legacy Inter-VLAN Routing c. Configure Router-on-a-Stick Inter-VLAN d. Routing Troubleshoot Inter-VLAN e. Routing Layer 3 Switching f. Troubleshoot Layer 3 Switching
Static Routing	a. Static Routing b. Types of Static Routes c. Configure IPv4 Static Routes d. Configure IPv4 Default Routes e. Configure IPv6 Static Routes Review of CIDR and VLSM

Routing Dynamically	a. Dynamic Routing Protocol Operation b. Dynamic Versus Static Routing c. Routing Protocol Operating Fundamentals d. Types of Routing Protocols e. Link-State Dynamic Routing
Single-Area OSPF	a. Characteristics of OSPF b. Configuring Single-Area OSPFv2 c. OSPFv2 vs. OSPFv3 d. Verify OSPF
Access Control Lists	a. IP ACL Operation b. Standard Versus Extended IPv4 ACLS c. Wildcard Masks in ACLs d. Guidelines for ACL Creation e. Standard IPv4 ACLs
DHCP	Dynamic Host Configuration Protocol (DHCP) Configuring a basic DHCPv4 Server Configure DHCPv4 Client

	Percentage Weights
Midterm Exam	25%
Final Exam	25%
Chapter Exams	10%
Labs & Projects	30%

GRADING * Subject to change as necessary

Assessment methods are measured by:

Quizzes, Labs, Midterm and Final

Weeks	Subject	Labs and Projects
Week 1	**Mod 0 Building Data Com II Lab** a. Course Syllabus and Outcome b. Accessing Netacad.com c. Accessing Netseclab.capitalcc.edu d. Installing Packet Tracer 7.X	
Week 2	**CH 1 Basic Device Configuration** a. Configure a Switch with Initial Settings b. Configure Switch Ports c. Secure Remote Access d. Basic Router Configuration e. Verify Directly Connected Networks **CH 2 Switching Concepts Configuration** a. Frame Forwarding b. Switching Domains	1.3.6 Packet Tracer - Configure SSH 1.4.7 Packet Tracer - Configure Router Interfaces 1.5.10 Packet Tracer - Verify Directly Connected Networks 1.6.1 Packet Tracer - Implement a Small Network
Week 3	**CH 3 VLANs** c. Frame Forwarding d. Switching Domains **CH 4 Inter-VLANs Routing** a. Overview of VLANs b. VLANs in a Multi-Switched Environment c. VLAN Configuration d. VLAN Trunks e. Dynamic Trunking Protocol	3.3.12 Packet Tracer - VLAN Configuration 3.4.5 Packet Tracer - Configure Trunks 3.5.5 Packet Tracer - Configure DTP 3.6.1 Packet Tracer - Implement VLANs and Trunking 4.2.7 Packet Tracer - Configure Router-on-a-Stick Inter-VLAN Routing 4.3.8 Packet Tracer - Configure Layer 3 Switching and Inter-VLAN Routing 4.4.8 Packet Tracer - Troubleshoot Inter-VLAN Routing

		4.5.1 Packet Tracer - Inter-VLAN Routing Challenge
Week 4	**CH 5 STP Concepts** a. Purpose of STP b. STP Operations c. Evolution of STP **CH 6 Etherchannel** a. EtherChannel Operation b. Configure EtherChannel c. Verify and Troubleshoot d. EtherChannel	5.1.9 Packet Tracer - Investigate STP Loop Prevention 6.2.4 Packet Tracer - Configure EtherChannel 6.3.4 Packet Tracer - Troubleshoot EtherChannel 6.4.1 Packet Tracer - Implement Etherchannel
Week 5	**CH 7 DHCPv4** a. DHCPv4 Concepts b. Configure DHCPv4 Server c. Configure DHCPv4 Client **CH 8 SLAAC and DHCPv6** a. IPv6 Global Unicast Address Assignment b. SLAAC c. DHCPv6 d. Configure DHCPv6 Server **CH 9 FHRP Concepts** a. First Hop Redundancy Protocol b. HSRP	7.2.10 Packet Tracer - Configure DHCPv4 - 7.4.1 Packet Tracer - Implement DHCPv4 -
Week 6	**CH 10 LAN Security Concepts** a. Endpoint Security b. Access Control c. Layer 2 Security Threats d. MAC Address Table Attack **e.** LAN Attacks **CH 11 Switch Security** a. Implement Port Security b. Mitigate VLAN Attacks c. Mitigate DHCP Attacks d. Mitigate ARP Attacks e. Mitigate STP Attacks	11.1.10 Packet Tracer - Implement Port Security - 11.6.1 Packet Tracer - Switch Security Configuration -
Week 7	**CH 12 WLAN Concepts** a. Introduction to Wireless b. Components of WLANs c. WLAN Operation d. CAPWAP Operation e. Channel Management f. WLAN Threats g. Secure WLANs **CH 13 WLAN Configuration** a. Remote Site WLAN b. Configuration c. Configure a Basic WLC on the d. WLC e. Configure a WPA2 Enterprise f. WLAN on the WLC Troubleshoot WLAN Issues	13.1.10 Packet Tracer - Configure a Wireless Network 13.2.7 Packet Tracer - Configure a Basic WLAN on the WLC - 13.3.12 Packet Tracer - Configure a WPA2 Enterprise WLAN on the WLC 13.4.5 Packet Tracer - Troubleshoot WLAN Issues - 13.5.1 Packet Tracer - WLAN Configuration -

Week 8	**CH 14 Routing Concepts** a. Path determination b. Packet Forwarding c. Basic Router Configuration review d. IP Routing Table e. Static and Dynamic Routing	14.3.5 Packet Tracer - Basic Router Configuration Review - 15.6.1 Packet Tracer - Configure IPv4 and IPv6 Static and Default Routes - 16.3.1 Packet Tracer - Troubleshoot Static and Default Routes -

	CH 15 IP Static Routing a. Static Routes b. Configure IP Static Routes c. Configure IP Default Static Routes d. Configure Floating Static Routes e. Configure Static Host Routes **CH 16 Troubleshoot Static and Default Routes** a. Packet Processing with Static Routes b. Troubleshoot IPv4 Static and Default Route Configuration	