Cisco Discovery 4: Designing and Supporting Computer Networks (ITCC 1313)

Credit: 3 semester credit hours (2 hours lecture, 2 hours lab)

Prerequisite/Co-requisite: ITCC 1312

Course Description

Learners progress through a variety of case studies and role-playing exercises, which include gathering requirements, designing basic networks, establishing proof-of-concept, performing project management tasks, lifecycle services, including upgrades, competitive analyses, and system integration.

Required Textbook and Materials

1. *Connecting Networks***,** by Cisco Networking Academy, Cisco Press, 2014.
    a. ISBN number for print book is 978-1-58713-332-9

Course Objectives

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

1. Gather customer requirements to design a simple network using Cisco technology.
2. Design an IP addressing scheme.
3. Create an equipment list to meet LAN design requirements.
4. Create and resend a proposal to a customer.
5. Obtain and upgrade Cisco IOS Software in Cisco devices while installing and configuring a prototype network.

Course Outline

1. Hierarchical Network Design
    a. Hierarchical Network Design Overview
    b. Cisco Enterprise Architecture
    c. Evolving Network Architecture
2. Connecting to the WAN
    a. WAN Technologies Overview
    b. Selecting a WAN Technology
3. Point-to-Point Connections
    a. Serial Point-to-Point
    b. PPP Operation
    c. Configure PPP
    d. Troubleshoot WAN Connectivity
4. Frame Relay
    a. Introduction to Frame Relay
    b. Configure Frame Relay
    c. Troubleshoot Connectivity

5. Network Address Translation IPv4
    a. NAT Operation
    b. Configuring NAT
    c. Troubleshooting NAT
6. Broadband Solutions
    a. Teleworking
    b. Comparing Broadband Solutions
    c. Configuring xDSL Connectivity
7. Securing Site-to-Site Connectivity
    a. VPNs
    b. Site-to-Site GRE Tunnels
    c. Introducing IPsec
    d. Remote Access
8. Monitoring the Network
    a. Syslog
    b. SNMP
    c. Netflow
9. Troubleshooting the Network
    a. Troubleshooting with a Systematic Approach
    b. Network Troubleshooting

Grade Scale

90 – 100	A
80 – 89	B
70 – 79	C
60 – 69	D
0 – 59	F

Course Evaluation

Final grades will be calculated according to the following criteria:

1. Labs	30%
2. Study Guides	10%
3. Module Tests	30%
4. Final Exam	30%

Course Requirements

1. Demonstrate proficiency through hands-on labs as assigned.
2. Build and troubleshoot virtual labs in Packet Tracer as assigned.
3. Complete Module Study Guides.

Course Policies

1. No food, drinks, or use of tobacco products in class.

2. Electronic devices not being used for the class, such as phones and headphones, must be turned off while in class.
3. Do not bring children to class.
4. Certification: If s student passes the certification test that is associated with this class you will receive an "A" on the final exam and credit for 25% of your labs. If you have missed a previous test you must still take the final exam to substitute for that grade.
5. Attendance Policy: Three absences are allowed. If a student is tardy to class or departs early three (3) times, it will be equal to one (1) absence. Each absence beyond three absences will result in a 2 point deduction from your final grade.
6. If you wish to drop a course, the student is responsible for initiating and completing the drop process. If you stop coming to class and fail to drop the course, you will earn an 'F' in the course.
7. Tools: Return all tools and/or software to their designated place.
8. A grade of 'C' or better must be earned in this course for credit toward degree requirement:
9. Additional course policies, as defined by the individual course instructor, will be outlined in the course addendum and provided by the instructor.

Disabilities Statement

The Americans with Disabilities Act of 1992 and Section 504 of the Rehabilitation Act of 1973 are federal anti-discrimination statutes that provide comprehensive civil rights for persons with disabilities. Among other things, these statutes require that all students with documented disabilities be guaranteed a learning environment that provides for reasonable accommodations for their disabilities. If you believe you have a disability requiring an accommodation, please contact the Special Populations Coordinator at (409) 880-1737 or visit the office in Student Services, Cecil Beeson Building.

Technical Requirements **(for courses using Blackboard)**

The latest technical requirements, including hardware, compatible browsers, operating systems, software, Java, etc. can be found online at:

https://help.blackboard.com/en-us/Learn/9.1_2014_04/Student/015_Browser_Support/015_Browser_Support_Policy

A functional broadband internet connection, such as DSL, cable, or WiFi is necessary to maximize the use of the online technology and resources.

Student Code of Conduct Statement

It is the responsibility of all registered Lamar Institute of Technology students to access, read, understand and abide by all published policies, regulations, and procedures listed in the LIT Catalog and Student Handbook. The LIT Catalog and Student Handbook may be accessed at www.lit.edu or obtained in print upon request at the Student Services Office. Please note that the

online version of the LIT Catalog and Student Handbook supersedes all other versions of the same document.

Certification Requirement

CNTT majors are required to earn certification in one of the following areas prior to graduation.

- A+ Certification
- Cisco Certified Entry Network Technician (CCENT)
- Cisco Certified Network Associate (CCNA)
- Microsoft Certified Solutions Associate (MCSA)

This course covers part of the material to prepare for the Cisco Certified Network Associate (CCNA) Routing and Switching certification. All four Cisco courses must be completed to cover the material for the CCNA exam. The CCNA credential can be earned by taking two tests, Interconnecting Cisco Networking Devices Part 1 (ICND1) and Interconnecting Cisco Networking Devices Part 2 (ICND2), or by taking one test, Interconnecting Cisco Networking Devices: Accelerated (CCNAX). ICND1 is test number 100-101, ICND2 is test number 200-101, and the CCNAX test number is 200-120. Students are responsible for scheduling and paying for the certification through the LIT Testing Center. More information about the certification can be found online at http://www.cisco.com/c/en/us/training-events/training-certifications/certifications.html.

Course Schedule

Week of	Topic	Reference
Week 1	Syllabus and policies Navigating Cisco Website Course Introduction	https://cisco.netacad.net
Week 2	Chapter 1: Hierarchical Network Design	Cisco Online
Week 3	Chapter 1: Hierarchical Network Design Chapter 2: Connecting to the WAN	Labs Cisco Online
Week 4	Chapter 2: Connecting to the WAN	Labs
Week 5	Chapter 3: Point-to-Point Connections	Cisco Online
Week 6	Chapter 3: Point-to-Point Connections Chapter 4: Frame Relay	Labs Cisco Online
Week 7	Chapter 4: Frame Relay	Labs
Week 8	Chapter 5: Network Address Translation for	Cisco Online

Week of	Topic	Reference
	IPv4	
Week 9	Chapter 5: Network Address Translation for IPv4	Labs
Week 10	Chapter 6: Broadband Solutions	Cisco Online
Week 11	Chapter 6: Broadband Solutions	Labs
	Chapter 7: Securing Site-to-Site Connectivity	Cisco Online
Week 12	Chapter 7: Securing Site-to-Site Connectivity	Labs
Week 13	Chapter 8: Monitoring the Network	Cisco Online
Week 14	Chapter 8: Monitoring the Network	Labs
	Chapter 9: Troubleshooting the Network	Cisco Online
Week 15	Chapter 9: Troubleshooting the Network	Labs
Week 16	Final Exam	https://cisco.netacad.net

Contact Information:

Program Director: Lauri Arnold-Calder
Program Director
Computer Networking and Troubleshooting Technology

Office: Office 103C, TA-4

Telephone: (409) 839-2050

E-mail: lauri.arnold@lit.edu