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ITS 252.01M: CNNA 4 - Exploration - Connecting Networks

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ITS 252, CONNECTING NETWORKS

CREDITS: 3

Spring, 2016

March 14- May 13, 2016

COURSE DESCRIPTION:

Discusses the WAN technologies and network services required by converged applications in a complex network. The course enables students to understand the selection criteria of network devices and WAN technologies to meet network requirements. Students learn how to configure and troubleshoot network devices and resolve common issues with data link protocols. Students also develop the knowledge and skills needed to implement IPsec and virtual private network (VPN) operations in a complex network.

REQUIRED TEXTBOOK:

CCNA Command Quick Reference, Cisco Press, 2013, ISBN: 978-1-58713-159-2 (from ITS 152)

Connecting Networks Lab Manual Cisco Press, 2014, ISBN: 978-1-58713-331-2

FACULTY: Wally Higgins

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Phone: 406-243-7922

OFFICE HOURS:

Office hours are: M,W 11-12pm; T 10:30-11 & 2:30-3 or by appt.

COURSE IMPLEMENTATION:

Coursework (textbook) and all testing is done on-line in a multimedia format. Students need modern computer equipment capable of viewing text, html, audio, video, and flash animation. Hands-on labs and e-labs using simulation techniques are utilized.

PREREQUISITE: ITS 150, 152 & 252 See me about exceptions.

PERFORMANCE OUTCOMES:

At completion of course, students will be able to:

1. Understand and describe different WAN technologies and their benefits
2. Understand and describe the operations and benefits of virtual private networks (VPNs) and tunneling
3. Configure and troubleshoot serial connections
4. Configure and troubleshoot broadband connections
5. Configure and troubleshoot IPsec tunneling operations
6. Monitor and troubleshoot network operations using syslog, SNMP, and Netflow
7. Design borderless networks
8. Design data centers and virtualization
9. Design collaboration technology and solutions

EVALUATION:

Assignments will be graded on a point system; total points possible will be announced at the start of each project. Quizzes and tests will also be on a point system. Total points earned will be divided by total points possible to get a percentage with grade conversion as follows:

90 - 100 **A** | 80 - 89 **B** | 70 - 79 **C** | 60 - 69 **D**

FINAL: 30% on-line chapter quizzes
 35% pop-quizzes, labs, lab tests, homework
 20% on-line final
 15% skills final

NOTE: Students must maintain a minimum grade of "C-" in all classes that count toward major for the AAS degree.

There are no points given for work turned in late; therefore, it is essential to meet all deadlines.

FINAL:

The final for this course is scheduled for **Friday, May 13, 8-10 a.m. in HB 3 and 4.**

INCOMPLETE POLICY:

There is no option for receiving an "incomplete" for a final grade in this course because the course content, assignments, group projects, and labs change frequently. Please contact instructor for other options if you find yourself in a position that you cannot complete the work.

ACCOMMODATION:

Eligible students with disabilities will receive appropriate accommodations in this course when requested in a timely way. Please contact instructor via email. Please be prepared to provide a letter from your DSS Coordinator. For more information, visit the Disability Services website at www.umt.edu/dss/ or call 406-243-2243 (voice/text).

ACADEMIC INTEGRITY:

All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University. All students need to be familiar with the Student Conduct Code. The Code is available for review online at http://life.umt.edu/vpsa/student_conduct.php

EXPECTATIONS/POLICIES:

1. Class structure will include lectures on new material, assignments, lab assignments, group discussions, research of current periodicals and Internet, review, handouts, and scheduled tests. Internet and e-mail is used extensively. Course curriculum (textbooks) and all tests are on-line.
2. Cisco Academy site will be used for learning management system, as well as Moodle.
3. Official UM email is mandatory for all correspondence between instructor and students. If you would like to forward this email to a personal email, you can do that in Cyberbear.

However, you must generate new messages from UM Connect account. This also applies to correspondence to admissions, the registrar, financial aid, and administration of Missoula College and UM.

4. As each project is assigned, total points possible, due date, and specific requirements will be announced in class and posted on Moodle.
5. No points are given for late submissions.
6. Interactive exercises and e-labs will be assigned with each chapter.
7. All grades will be on the Cisco course management system.

CHANGES TO SYLLABI:

Note: Instructor reserves the right to modify syllabi and assignments as needed based on faculty, student, and/or environmental circumstances. If changes are made to the syllabus, amended copies will be dated and made available to the class.

SYLLABUS UPDATED: January, 2016

COURSE OUTLINE:

- I. Hierarchical Network Design
 - A. Hierarchical Network Design Overview
 - B. Cisco Enterprise Architecture
 - C. Evolving Network Architectures
- II. Connecting to the WAN
 - A. WAN Technologies Overview
 - B. Selecting a WAN Technology
- III. Point-to-Point Connections
 - A. Serial Point-to-Point Overview
 - B. PPP Operation
 - C. Configure PPP
 - D. Troubleshoot WAN Connectivity
- IV. Frame Relay
 - A. Introduction to Frame Relay
 - B. Configure Frame Relay
 - C. Troubleshoot Connectivity
- V. Network Address Translation for IPv4
 - A. NAT Operation
 - B. Configuring NAT
 - C. Troubleshooting NAT
- VI. Broadband Solutions
 - A. Teleworking
 - B. Comparing Broadband Solutions
 - C. Configuring xDSL Connectivity

- VII. Securing Site-to-Site Connectivity
 - A. VONs
 - B. Implementing GRE Tunnels
- VIII. Monitoring the Network
 - A. Syslog
 - B. SNMP
 - C. Netflow
- IX. Troubleshoot the Network
 - A. Systematic Approach
 - B. Network Troubleshooting