

ITS 150-50 Introduction to Networks

Rubric: ITS

Term: Autumn 2023

Number: 150

Lecture: Online

Section: 50

Lab: Online Simulations

CRN: 73270

Instructor Information

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Office Hours (or by appointment): Appointments are best

Day	Hours
Monday	Zoom by Appointment M, T, W, TH (I'm flexible)
Tuesday	
Wednesday	
Thursday	
Friday	

Course Description

Offered each semester at Missoula College. The Introduction to Networking course covers terminology; protocols; local-area and wide-area networks; the OSI model; topologies; IP addressing; cabling and cabling tools; routers and router programming. Ethernet and network standards; and wireless technologies.

Aligns with CAE KU:

- Technical Core – Basic Networking

Course Overview

This class is designed to provide the student a good general understanding of Computer Networking fundamentals.

- The understanding and implementing general computer networking concepts.
- The understanding network terminologies, protocols and IP Addressing
- The development and implementation of local-area and wide-area networks with simulation models.
- The understanding of the OSI & TCP/IP models in network construction & troubleshooting.
- Introduce Ethernet and network standards used currently in the IT industry.
- Introduce Routers, Switches and Wireless Router configurations and operations.

Course Outcomes

Upon completion of this course students will:

- Understand the basic components of a computer network and how they function.
- Compare and select appropriate networking devices to segment networks using the OSI and/or TCP/IP models
- Design a basic IP addressing scheme using standard subnetting techniques.
- Choose logical and physical LAN topology to solve networking problems.
- Evaluate networking media, connectors, wiring closets, cabling and patch panels.
- Create, construct, and test network scenarios using the Netacad simulation software.
- Understand the installation of structured cabling, patch cables, wireless and digital test equipment using the simulation software.

Topics Covered:

			Assessments
Weeks 1 - 3 August 28 – September 19	Getting started	Receive your Email from Cisco with Initial Password to get started with Netacad. Successfully load the Packet Tracer Lab Simulation software from Resources in Netacad. Start Modules 1-3	I will monitor your progress and assist if necessary. Complete Lab 2.3.8 <i>Navigate the IOS</i> Use the Navy-Blue link
	Modules 1 -3	Networking Today – basic foundational info on networks plus getting started with Packet Tracer	Complete Packet Tracer 2.7.6 <i>Implement Basic Connectivity</i>
		Finish up Module 1 and start Module 2 Basic Switch and End device configuring. Do a couple Packet Tracers TBD	Complete Lab 2.9.2 <i>Basic Switch and End Device Configuration</i> Use the Navy-Blue link

		<p>Module 3 Protocols and Models. Learn the basic protocols (rules and standards) of networks. First Module group 1-3 exam.</p> <p>*The Exams are online, open book and not proctored.</p>	<p>Complete the Module 1-3 Exam.</p> <p>Weeks 1-3 work due September 20th by 11:59PM</p>
Weeks 4 - 7 September 20 – October 7	Modules 4 -7	<p>Start Mod 4 Physical layer.. Mod 4 covers the cables, copper and fiber plus wireless. Layer 1 of the OSI model you met in Module 3.</p>	<p>Complete Packet Tracer 4.6.5 <i>Connect a Wireless and Wired LAN</i></p>
		<p>Module 5 is about the Number Systems. Computers communicate with both decimal and hexadecimal numbers which are translated into binary (1s & 0s) to travel through Layer 1 medias.</p>	<p>Open the IPv4 Handbook and review the first few pages about binary to decimal conversion. We will study these in detail in Module 11.</p>
		<p>Module 6 covers layer 2 of the OSI model. This is the equipment and software that send and receive the data to the media. NIC card, fiber optic cards or wireless NICs.</p>	<p>There are no Packet Tracers or Labs in Modules 5 & 6. Study the material closely on your own.</p> <p>Lab 7.3.7 <i>View the Switch MAC Address Table</i>. Build this in Packet Tracer and submit the answers to the questions. Use the Navy-Blue link</p>
		<p>Mod 7 covers Ethernet switching which goes into Ethernet and Wireless Lan technology. The physical addresses are explained in detail.</p> <p>Lots of practice exercises.</p> <p>Module group 4-7 exam</p>	<p>Complete the Module 4 – 7 exam</p> <p>Weeks 4 - 7 work due by October 8th by 11:59PM</p>
Weeks 8- 10 October 8 th – October 28 th	Modules 8-10	<p>Module 8 intros the Network layer 3. This layer puts the addresses needed for you device to communicate outside your network. You know...the internet perhaps. We will also start Module 9 these weeks which goes over ARP.</p>	<p>Complete Packet Tracer 9.2.9 <i>Examine the ARP Table</i></p> <p>Complete Packet Tracer 10.1.4 <i>Configure Initial Router Settings</i></p>

		When you type in a name i.e.cnn.com, the name has to be assigned an IP address,	Complete Packet Tracer 10.4.3 <i>Basic Device Configuration</i>
		Module 10 covers basic router configuration. Much of these configs are identical to the ones introduced for Switches back in Module 2. The mod group 8-10 exam turned on here as well.	Complete Module Group 8 – 10 Exam Week 5 work due October 29 th by 11:59PM
Weeks 9 - 12 October 29 – November 18	Modules 11-13	Module 11 is going to be key. It goes into detail about the IPv4 addresses which layer 3 needs to communicate with. Every device on the networks you access have to have unique IP address. You'll be introduced to subnetting here as well.	Complete the IPv4 Worksheet In the Moodle Shell, submit it in a Word or PDF document. Complete Packet Tracer 11.5.5 <i>Subnet an IPv4 Network</i> One Subnet needs 50 host addresses. Hint: use the IPv4 handbook
		Module 12. IPv6 addresses. The world is running low on IPv4 address and workarounds so...IPv6.	Open and review the IPv6 Handbook. Be able to identify valid IPv6 addressing. Global and Link-local. Complete Lab 10.4.4 which includes the IPv6 addresses. Use the Packet Tracer Physical (PTPM) option. Use the Navy-Blue link
		Module 13 ICMP messaging. You will have done a ping test by now which is ICMP. It's one of the most used tools in Networking. Module 11-13 exam.	Module Group 11 – 13 exam Weeks 9 - 12 work due November 19 th by 11:59PM

<p>Weeks 13-14 November 19 – December 2</p>	<p>Modules 14 - 15</p>	<p>This week we start Module 14 Transport Layer 4. This assigns protocols TCP (every packet error checked) and UDP (packets just streamed into your device). Lots of video help in this module.</p>	<p>Weeks 13 -14 work due by December 3rd @ 11:59PM</p> <p>Lab 15.4.8 <i>Observe DNS resolution</i> Submit answers to the questions in a Word document.</p>
		<p>Module 15 covers the top 3 layers of the OSI model Application 7 (what you want to do), Presentation 6 (encryption perhaps) and the Session 5 (each session sorted out, like when you are doing multiple things at once on your pc). They have to be sorted out. Modules 14-15 exam.</p>	<p>Module Group 14 – 15 exam</p>
<p>Week 15 to Finals Week December 3rd – December 15th</p>	<p>Modules 16 - 17</p>	<p>Module 16 gives some fundamentals of Network Security and Module 17 has us put together a small network.</p> <p>Final Lab 16.5.1 Secure Network Devices</p> <p>Last exam over Modules 16-17</p>	<p>Packet Tracer 16.4.6 <i>Configure Secure Passwords and SSH</i> (remote secure access to your network devices).</p> <p>Final Packet Tracer 16.5.1 Secure Network Devices</p> <p>Module Group 16-17 Exam Week 9 work due by semester end December 15th</p>
<p>Finals Week December 8th – December 14th</p>		<p>Final Exam – Cumulative over entire Semester To simulate a Certification type of Exam. Cisco generates them & each person’s exam is unique. You will earn a badge for your resume by scoring 70% or higher on the exam.</p> <p>Complete any assignments you have outstanding.</p>	<p>The final exam can be activated for one week. Therefore, it will be active from December 8th @ 5:00PM until December 14th @ 5:00PM. Students must complete the <u>Course Overview</u> before the exam activates. (5 minutes or so) All work including late work due by December 15th @ 5:00PM.</p>

Resources:

CCNA Routing and Switching: Introduction to Networking

Accessed at <https://www.netacad.com> after you receive your initial password in an email at your umontana.edu address.

There is no cost to the students as we are members of the Cisco Networking Academy.

A computer with good internet and the ability to download software.

Grading:

Packet Tracer/Homework/Quizzes.....	40.0%
Module Group Exams	35.0%
Final Exam.....	25.0%

Grading Scale

100% - 90%	A
< 90% - 80%	B
< 80% - 70%	C
< 70% - 60%	D
< 60%	F

<Please add any other sections you need here>

Disability Statement

The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and the Office for Disability Equity (ODE). If you anticipate or experience barriers based on disability, please contact the ODE at: (406) 243-2243, ode@umontana.edu, or visit www.umt.edu/disability for more information. Retroactive accommodation requests will not be honored, so please, do not delay. As your instructor, I will work with you and the ODE to implement an effective accommodation, and you are welcome to contact me privately if you wish.

Scholarly Conduct:

Online Component

There will be some components of the course to be delivered via UOnline (<http://umonline.umt.edu>) using the Moodle Course Management Software. It is the responsibility of the student to be familiar with, and able to work in, the Moodle **shell**. Moodle training is available through UOnline at [Moodle 101 for Students](#). I will be creating Activities in the shell to post your HW, Lab and Exam scores from Cisco. There will also be live lab simulation activities in each of the module groups instructing you to upload Packet Tracer 8.2 PKA files to be graded and critiqued. I will be adding retainable resources to the shell as well for you to keep as references in your future endeavors.

Attendance

- Regular online attendance is expected. Both programs track the time spent on each assignment. I will use this information when I complete the progress updates which are tracked by the University.

Assignments and Exams

- All assigned work is due at the assigned time on the assigned date.
- All exams are to be taken at the assigned time on the assigned date.

Note: Addendum to formal Syllabus. Homework and quizzes are due on the due date. We will allow a couple days extra time but will deduct 10% if it's late. Our department head requested we establish a policy for assignments so we aren't deluged with late work at the end of semester. Your future clients will require punctuality so do we now.

Email

This course uses your student email account for all course email communication. Therefore, you are required to monitor and use your student email account for all course email communication.

Student Conduct

- *All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or disciplinary sanction by the University.*
- *Student conduct is governed by the Student Conduct Code. All students need to be familiar with the Student Conduct Code. It is available for review or can be downloaded at http://www.umt.edu/vpsa/policies/student_conduct.php.*

Students with Disabilities

- Eligible students with disabilities will receive appropriate accommodations in this course when requested in a timely manner. Please be prepared to provide me a copy of your *Letter of Verification* supplied by your *Disability Services for Students* (DSS) Coordinator for my records. Refer to <http://life.umt.edu/dss> or call **406-243-2243** (voice/text) for information regarding your rights.
- When requesting accommodations, please contact me after class or in my office to discuss your needs. This is done in order to maintain your privacy and minimize class disruptions.
- For students requesting examination accommodations, you must supply me the completed Learning Center (LC) scheduling form for my signature at least 3 days prior to the scheduled test date (the LC requires the signed form at least two days prior to testing). LC contact information is available at <http://mc.umt.edu/learning-center/> or call **406-243-7826**.

Policies for Dropping and Adding Courses, Changing Sections, Grading, and Credit Status

- The University Policy for dropping courses or requesting grading/credit status changes can be found in the academic catalog or on the web at <http://www.umt.edu/registrar/students/dropadd.php>. All students should be familiar with this policy.

- If you are having difficulty with the course for any reason and decide not to continue, please complete a drop or withdrawal form. A properly completed and approved drop or withdrawal form will prevent you from receiving a failing grade on your college transcript.
- Please note: if you are receiving financial aid, dropping or withdrawing from a course may affect your financial aid status.

Changes to Syllabus

NOTE: The instructor reserves the right to modify the syllabus and assignments as needed based on faculty, student, and/or other circumstances. If changes are made to the syllabus, amended copies will be dated and made available to the class.