ITNW 1325
Fundamentals of Networking
Spring 2016

Instructor: Michael Slaughter
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Office Number: (806) 716-2242
Course Name: ITNW 1325.271
Course Days: Wednesday (Hybrid)
Course Time: 09:00 AM – 12:30 PM

Course Description

This course provides instruction in networking technologies and their implementation. Topics include the OSI reference model, network protocols, transmission media, and networking hardware and software.

Hybrid

This is a hybrid format class. This means we will meet for class once a week, and the remaining part of the course will be online. You must check Blackboard regularly for updates, otherwise you may miss an important announcement. Our in class meeting will be a mix between in class labs and lectures.

Textbook and Hardware Requirements

We will be using TestOut LabSim 4.0.215 and a supplemental text by Pearson for this course. You will need to purchase an activation code from the SPC bookstore. Once activated, you will need to enroll in the course mentioned below. Also below is a link to a video with instructions on how to enroll in the LabSim course. This software will provide you with a virtual environment that we will use for labs, homework assignments and exams. It will also provide you with a wealth of information, reading materials, and videos to aid in your learning experience. This particular LabSim course will also prepare you for the TestOut Network Pro Certification and the CompTIA Network + certification.

LabSim:
Promo Code: 14-232TA
Course Product: TestOut Network Pro 4.0   ISBN: 978-1-935080-43-5
School Name: South Plains College
Instructor Name: Michael Slaughter
Course Name: SP2016-ITNW 1325.271
Purchase Link: http://www.testout.com/home/student-resources/student-purchasing
Instructions Link: http://www.testout.com/home/student-resources/how-to-tutorials
   (View the "[Getting Started - Student Accounts Not Activated by Teachers](#)" PDF)

Pearson Book:
CompTIA Network+ N10-006 Deluxe Edition by Barker, Wallace, and Taylor
ISBN: 978-0-7897-5473-8

Software Requirements

Because some of the assignments will be done and submitted outside of class, you will need access to the following programs outside of the classroom:

- Internet Connection and Web Browser (Chrome or IE)
- Adobe Reader
- Microsoft Office
- TestOut Account

Assumed Knowledge

It is assumed that you possess basic computer skills relating to using the internet, applications and other basic computing tasks. It is also assumed that if you run into content you do not understand; you will research that content on your own as well as ask the instructor for assistance.

Communication

Communication for this class will be conducted through SPC email. All students will be required to check their SPC student email accounts regularly for course updates and announcements. Please include your name, course name, and section number in all email communication. Other important announcements may be given during in class meetings, so attendance is key for complete communication.

Attendance Policy

You will be **dropped** from the course with an "X" or an "F" after **four** absences, or if I feel the objectives cannot be met due to excessive absence. If you are not sure how many absences you have accumulated, please be sure to notify me so that I can provide you with an absentee count.

If you are absent, you are still required to complete the assigned work by the indicated due date. You'll want to be sure to ask a classmate what material you missed on the day you were absent so that you'll be caught up when you return. I will not repeat the information you missed when you return. Frequent tardiness will result in an absence.

Reading/Study Assignments

Mandatory, assigned reading is a requirement for this course. Reading assignments includes all material in the LabSim course content that is assigned for a given week, as well as the chapters assigned in the Network+ N10-006 textbook. Study assignments include all lectures in LabSim, demonstrations in LabSim, notes taken from your in-class lectures, and other content presented throughout the course. Although reading/study assignments are not taken for a grade, they are required to be successful in this course.

Assignments and Lab Projects

Procrastination will not serve you well in this course. Most assignments will be available through the LabSim software. Each chapter will have several small assignments and labs that will count toward your homework grade. For the TestOut LabSim section assigned, all labs and exams are pulled for homework grades.

There will also small homework assignments and projects that will be assigned periodically throughout the semester. These assignments and/or projects will be announced in class and available in Blackboard. **NO LATE WORK IS ACCEPTED!** In-class labs will also be completed throughout this course. It is expected that you take care of all equipment and check that equipment in/out with the instructor.

Quizzes

Quizzes will be given throughout the semester. You are required to be in class to take a quiz. No make-up quizzes will be given.

Exams

There will be two exams given in this class, a midterm and a final exam. **Make-up exams will not be given.** If the midterm exam is missed, then the final exam grade will count as both the final and midterm grade. Also, if a student does better on the final than the midterm, I will substitute the final grade as the midterm grade.

Grades

Grades will be calculated as follows:

	Possible Points
Assignments/Lab Projects	20%
Quizzes	10%
Midterm	30%
Final Exam	40%

All assignments are mandatory. **I reserve the right to drop or fail you if homework assignments are frequently missed or incomplete.**

Grades will be available through LabSim (Homework/Exam Grades) and Blackboard. Blackboard grades will show a running average of how you are performing throughout the semester. Blackboard grades will be updated regularly throughout the semester.

Instructional and Outside Course Time Estimation:

In-Class Instructional/Lab/Quiz Time: 3.3hrs/wk x 16wks = 52.8 hrs

TestOut LabSim Time: 4.6hrs/wk x 16wks = 75 hrs

Midterm Exam Prep: 4 hrs/wk x 2 wks = 8hrs

Final Exam Prep: 4hrs/wk x 3wks = 12 hrs

Network Pro Cert Exam: 2hrs x 1 = 2 hrs

Exam Time: 2hrs/exam x 2 = 4 hrs

Total Course Time = 153.8 hrs

Total Time/Week = 9.6125 hrs

In-Class Computer, Cell Phone and iPod Use

Students will **not** be allowed to surf the web, check their personal e-mail or social media accounts, or do work for any other course while class is in session.

Students will not be allowed to use their cell phones during class. If the student is found using social media, surfing the web, or using their cell phone, they will be asked to leave the class and they will be counted absent for that day. If the incident reoccurs, they will be reported to the dean of students. In cases of emergency, the student is asked to leave the classroom to use

their cell phone. **If a student has a cell phone or other device out during an exam, they will be asked to leave and will get a zero for that exam.**

Food and Drinks
No food or drinks are allowed in the Technology Center. Do not bring those to class. If you do, you will be asked to leave class and counted as absent. If this happens more than once you may be dropped from the class.

Drop Policy
You may be dropped from this course for the following reasons:

- Attendance
    - You have four or more absences
- Participation, completion of homework, exams, and team project
    - You have missed 2-3 classes and several homework assignments
    - You have missed several homework assignments
    - You have missed two or more exams without rescheduling with the instructor
- Academic Integrity
    - Cheating, plagiarism, or sharing your work with others

Academic Integrity
It is the aim of the faculty at South Plains College to foster a spirit of complete honesty and a high standard of integrity. The attempt of any student to present as his or her own any work which he or she has not honestly performed is regarded by the faculty and administration as a most serious offense and renders the offender liable to serious consequences and possible suspension. Please refer to the SPC General Catalog regarding consequences for cheating and plagiarism. **I reserve the right to administratively drop with an "F" any student whom I suspect of academic dishonesty.**

Do not, under any circumstances, turn in another student's file as your own. Do not, under any circumstances, give your file to anyone else to turn in as their own. Both situations are representative of academic dishonesty and will be treated as such. Disclaimer

Because we will use Blackboard to conduct a portion of this class, please note that the materials you may be accessing in chat rooms, bulletin boards or unofficial web pages are not officially sponsored by South Plains College. The United States Constitution rights of free speech apply to all members of our community regardless of the medium used. We disclaim all liability for data, information or opinions expressed in these forums.

Diversity Statement
In this course, the teacher will establish and support an environment that values and nurtures individual and group differences and encourages engagement and interaction. Understanding and respecting multiple experiences and perspectives will serve to challenge and stimulate all of us to learn about others, about the larger world, and about ourselves. By promoting diversity and

intellectual exchange, we will not only mirror society as it is, but also model society as it should be and can be.

Special Services
4.1.1.2 Disabilities Statement
Students with disabilities, including but not limited to physical, psychiatric, or learning disabilities, who wish to request accommodations in this class should notify the Disability Services Office early in the semester so that the appropriate arrangements may be made. In accordance with federal law, a student requesting accommodations must provide acceptable documentation of his/her disability to the Disability Services Office. For more information, call or visit the Disability Services Office through the Guidance and Counseling Centers at Reese Center (Building 8) 716-4606, or Levelland (Student Services Building) 716-2577.

Counseling
If at any point in the semester you find yourself having trouble with stress or feel depressed please stop in and see a counselor. Counseling services are available at all campuses. The number for the counseling office is 806-716-2366. Below is a link to SPC's personal counseling services.

http://www.southplainscollege.edu/information-for/current-spc-students/counseling-current/personal-counseling.php

ITNW1325: Fundamentals of Networking Technologies

WECM Course Catalog

Description: Instruction in networking technologies and their implementation. Topics include the OSI reference model, network protocols, transmission media, and networking hardware and software.

Outcomes: Identify and use network transmission media; explains the OSI model; Identify the characteristics of network topologies and protocols; identify the functions of a network operating system and distinguish between centralized, client/server, and peer-to-peer systems; and distinguish between Local Area Networks (LANs) and Wide Area Networks (WANs) and identify the components used to expand a LAN into a WAN.

1. Students will engage in a general overview of networking concepts and structures, including topologies, protocols, and terminology.
2. Students will learn and demonstrate their understanding of physical network media, including:
   - Twisted pair cabling
   - Coaxial cabling
   - Fiber optic cabling
   - Network adapters
   - Network devices
   - Ethernet.
3. Students will learn and demonstrate their understanding of network implementation including:
   - IP addressing
   - Address assignment
   - Name resolution
   - Routing
   - NAT
   - IPv6
   - Virtual networking.
4. Students will learn and demonstrate their understanding of wireless networking including:
   - Wireless concepts
   - Wireless security
   - Wireless configuration
5. Students will learn and demonstrate their understanding of wide area networks (WANs) including:
   - WAN concepts
   - Internet connectivity

- Remote access
6. Students will learn and demonstrate their understanding of network security including:
   - Network threats
   - Firewalls
   - VPNs
   - Switch security
   - Authentication
   - Secure protocols
   - Intrusion Detection and Prevention
7. Students will learn and demonstrate their understanding of network management including:
   - Documentation in networking
   - SNMP
   - Remote management
   - Monitoring
   - Optimization
8. Students will learn and demonstrate their understanding of network troubleshooting including:
   - General troubleshooting
   - Troubleshooting network communication
   - Troubleshooting physical connectivity
   - Troubleshooting IP configuration
   - Troubleshooting name resolution
   - Troubleshooting switching
   - Troubleshooting routing
   - Troubleshooting wireless network issues
9. Students will undergo a rigorous lab based exam, comparative to the CompTIA Network+ certification exam, sponsored by TestOut LabSim to test their knowledge and understanding of all concepts taught in this course.

Course Schedule

Week	Date	Chapter
1	Jan 19-24	TestOut 0.0-2.5 Network + Ch. 1 & 2
2	Jan 25-31	TestOut 3.0-4.4 Network+ Ch. 3 & 4
3	Feb 1-7	TestOut 5.0-5.5 Network + Ch. 5
4	Feb 8-14	TestOut 5.6-5.10 Network + Ch. 5
5	Feb 15-21	TestOut 6.0-6.7 Network + Ch. 10
6	Feb 22-28	TestOut 7.0-7.5 Network + Ch. 6 Midterm Review
7	Feb 29 – Mar 6	TestOut 8.0-9.6 Network + Ch. 12 Midterm Review
8	Mar 7-13	TestOut 10.0-10.7 Network + Ch. 8 MIDTERM EXAM
9	Mar 14-20	SPRING BREAK (TestOut 10.0-10.7 due at end of week)
10	Mar 21-27	TestOut 11.0-11.5 Network + Ch. 7
11	Mar 28 – Apr 3	TestOut 12.0-13.2 Network + Ch. 13
12	Apr 4-10	TestOut 13.3-13.8 Network + Ch. 12
13	Apr 11-17	TestOut 14.0-14.4 Network + Ch. 12
14	Apr 18-24	TestOut 15.0-15.8 Network + Ch. 7
15	Apr 25 – May 1	TestOut 16.0-16.2 Network + Ch. 9
16	May 2-8	TestOut Network Pro Certification Practice Exam (TESTOUT NETWORK PRO CERT. EXAM OPEN IF STANDARDS ARE MET) Network + Ch. 14
17	May 9-12	FINALS

- **These dates are subject to change. All HOMEWORK IS DUE on Sunday night at 11:59 PM.**

Approximate Time for the Course

The total time for the LabSim for Network Pro course is approximately **68 hours and 34 minutes**. Time is calculated by adding the approximate time for each section which is calculated using the following elements:

- Video/demo times
- Approximate time to read the text lesson (the length of each text lesson is taken into consideration but between 5-15 minutes each text lesson)
- Simulations (5 minutes assigned per simulation)
- Questions (1 minute per question)

Additionally, there are approximately another **26 hours and 14 minutes** of Practice Test material at the end of the course.

The total amount of LabSim content we will be covering comes to about 75 hours, which breaks down to about 5 hours of homework per week, plus time to read the content from the Pearson Network+ Cert Guide. The reason for the intensity in this course, is because this is what the industry expects you to know coming out of school. Dedicate the time to LEARNING the content and you will appreciate it when you graduate. –M. Slaughter

The breakdown for this course is as follows:

Module / Sections		Time	Videos	Labs	Text	Exams
0.0 Introduction						
0.1 Using the Simulator		29	19	10	0	0
	Total	0:29	0:19	0:10	0:00	0:00
1.1 Networking Basics						
1.1 Networking Overview		34	24	0	9	3
1.2 Network Topologies		26	7	0	7	12
1.3 The OSI Model		40	14	0	11	15
1.4 Network Signaling		21	13	0	5	3
1.5 Network Protocols		42	25	0	5	12
1.6 Numbering Systems		14	9	0	2	3
	Total	2:57	1:32	0:00	0:37	0:48
2.0 Cables and Connectors						
2.1 Twisted Pair		23	6	5	5	7
2.2 Coaxial		21	5	5	4	7
2.3 Fiber Optic		33	8	10	5	10
2.4 Wiring Implementation		63	23	10	15	15
2.5 Troubleshooting Network Media		59	32	0	20	7
	Total	3:19	1:14	0:30	0:49	0:46
3.0 Networking Devices						

		Time	Videos	Labs	Text	Exams
	3.1 Network Adapters	35	9	10	5	11
	3.2 Network Devices	30	10	10	5	5
	3.3 Internetwork Devices	21	6	5	5	5
	Total	1:26	0:25	0:25	0:15	0:21
Module	**Sections**	**Time**	**Videos**	**Labs**	**Text**	**Exams**
4.0 Ethernet						
	4.1 Ethernet	19	10	0	5	4
	4.2 Ethernet Specifications	35	9	5	6	15
	4.3 Connecting Network Devices	27	9	0	8	10
	4.4 Troubleshooting Physical Connectivity	60	13	25	7	15
	Total	2:21	0:41	0:30	0:26	0:44
5.0 IP Configuration						
	5.1 IP Addressing	75	31	10	20	14
	5.2 Alternate IP Addressing	23	10	5	5	3
	5.3 DHCP Server Configuration	56	18	25	5	8
	5.4 DHCP Relay	28	10	10	5	3
	5.5 DNS Name Resolution	71	32	30	6	3
	5.6 IP version 6	74	41	5	25	3
	5.7 Multicast	22	6	0	10	6
	5.8 Troubleshooting IP Configuration Issues	55	20	25	5	5
	5.9 Troubleshooting IP Communications	62	32	5	10	15
	5.10 Troubleshooting Name Resolution	27	15	0	5	7
	Total	8:13	3:35	1:55	1:36	1:07
6.0 Switch Management						
	6.1 Switch Access	47	24	5	15	3
	6.2 Switch IP Configuration	22	4	10	5	3
	6.3 Switch Interface Configuration	41	16	5	15	5
	6.4 Virtual LANs	45	12	10	10	13
	6.5 Trunking	57	18	15	20	4
	6.6 Spanning Tree Protocol	72	22	15	20	15
	6.7 Switch Troubleshooting	36	15	0	10	11
	Total	5:20	1:51	1:00	1:35	0:54
7.0 Routing						
	7.1 Routing Basics	20	10	0	5	5
	7.2 Routing Protocols	71	31	10	15	15
	7.3 Network Address Translation	47	29	0	7	11
	7.4 Routing Optimization	40	22	0	10	8
	7.5 Routing Troubleshooting	53	21	10	10	12
	Total	3:51	1:53	0:20	0:47	0:51
8.0 Firewalls						
	8.1 Firewalls	55	20	5	15	15
	8.2 Security Appliances	21	11	5	2	3

8.3 Firewall Design and Implementation		80	45	10	10	15
	Total	2:36	1:16	0:20	0:27	0:33

Module	Sections	Time	Videos	Labs	Text	Exams
9.0 Network Customization						
	9.1 Network-Based Storage	58	36	10	5	7
	9.2 Voice over IP (VoIP)	48	11	10	15	12
	9.3 Virtualization	24	13	0	7	4
	9.4 Virtual Networking	41	17	0	15	9
	9.5 Cloud Computing	23	12	0	7	4
	9.6 SCADA Systems	20	6	0	7	7
	Total	3:34	1:35	0:20	0:56	0:43
10.0 Wireless Networking						
	10.1 Wireless Concepts	39	16	0	20	3
	10.2 Wireless Standards	53	30	0	10	13
	10.3 Wireless Configuration	47	21	15	6	5
	10.4 Wireless Network Design	67	27	10	20	10
	10.5 Wireless Network Implementation	35	16	5	10	4
	10.6 Wireless Security	83	38	5	25	15
	10.7 Wireless Troubleshooting	74	30	20	10	14
	Total	6:38	2:58	0:55	1:41	1:04
11.0 Wide Area Networks (WANs)						
	11.1 WAN Concepts	57	27	0	15	15
	11.2 WAN Connections	33	10	5	10	8
	11.3 Internet Connectivity	52	22	5	10	15
	11.4 Remote Access	63	40	0	10	13
	11.5 WAN Troubleshooting	36	17	0	5	14
	Total	4:01	1:56	0:10	0:50	1:05
12.0 Network Policies and Procedures						
	12.1 Network Design, Documentation & Policies	68	28	0	25	15
	12.2 Safety	44	15	0	20	9
	12.3 Risk Management	45	6	0	25	14
	12.4 Security Policies and Assessments	62	27	0	20	15
	Total	3:39	1:16	0	1:30	0:53
13.0 Network Security						
	13.1 Physical Security	51	11	5	20	15
	13.2 Social Engineering	58	23	5	15	15
	13.3 Network Vulnerabilities and Threats 1	74	29	0	30	15
	13.4 Network Vulnerabilities and Threats 2	60	27	0	25	8
	13.5 Authentication	64	24	0	25	15

Sections	Time	Videos	Labs	Text	Exams
13.6 Secure Protocols	26	13	0	5	8
13.7 Remote Access Security	48	16	10	10	12
13.8 Troubleshooting Network Security Issues	41	21	0	15	5
Total	**7:02**	**2:44**	**0:20**	**2:25**	**1:33**

Module	Sections	Time	Videos	Labs	Text	Exams
14.0 Network Hardening						
	14.1 Detection and Prevention	66	21	10	20	15
	14.2 Penetration Testing	43	21	0	15	7
	14.3 Network Hardening	88	45	5	25	13
	14.4 Incident Response and Basic Forensics	84	44	0	25	15
	Total	**4:41**	**2:11**	**0:15**	**1:25**	**0:50**
15.0 Network Management						
	15.1 Update Management	38	24	0	10	4
	15.2 Data Protection	51	17	10	20	4
	15.3 Remote Management	36	18	5	10	3
	15.4 Mobile Device Management	65	31	5	15	14
	15.5 Data Center Management	84	44	0	25	15
	15.6 Monitoring	72	42	0	15	15
	15.7 Log File Management	22	9	0	10	3
	15.8 Network Management with SNMP	18	8	0	5	5
	Total	**6:26**	**3:13**	**0:20**	**1:50**	**1:03**
16.0 Network Optimization						
	16.1 Optimization	75	30	5	25	15
	16.2 Troubleshooting Methodology	46	16	0	20	10
	Total	**2:01**	**0:46**	**0:05**	**0:45**	**0:25**
Total Course Time	**68:34**					

Practice Exams

Network Pro Practice Exam	Number of Questions	Time
Domain 1: Cables and Connectors	5	25
Domain 2: Networking Devices	7	35
Domain 3: Ethernet	5	25
Domain 4: IP Configuration	12	60
Domain 5: Wireless Networking	4	20
Domain 6: Networking Security	3	15
Domain 7: Network Management	2	10
Network Pro Certification Practice Exam	40	200
Total	**81**	**6:30**

Network+ Practice Exams	Number of Questions	Time
Domain 1: Network Concepts	370	6:10
Domain 2: Network Installation and	177	2:57
Domain 3: Network Media and Topologies	265	4:25
Domain 4: Network Management	120	2:00

Domain 5: Network Security	162	2:42
Network+ Certification Practice Exam	90	1:30
Total	**1184**	**19:44**
Total Practice Exam Time		26:14