

Adding Interactivity to a Non-interactive Class

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Abstract

The IT 3050 course at Capella University is an introduction to fundamental computer networking. This course is one of the required courses in the Bachelor of Science in Information Technology program.

In order to provide a more enriched learning environment for learners, Capella has significantly modified this class (and others) by infusing it with interactive tools and web-based resources. Students report a more enhanced learning experience, which should result in many positive results for both the University and the learners (and, by extension, their employers).

The following discussion provides a more detailed look into these changes. The course has evolved from an online discussion-based approach to an online discussed-based approach infused with a wealth of interactive tools and web-based resources. First, the Network+ Virtual Lab software is required and learners report that this tool enhances their learning by providing a realistic hands-on experience. In addition, many Net-based resources are utilized, including downloadable software learners then install and evaluate. The combination of these features provides a more interactive and hands on class, therefore providing the learner with a “real world” environment. Thus, there is a significant value added effect present.

IT 3050 Learning Goals

Goal I. Describe the basic concepts of networking technology, standards, protocols, and architecture as related to systems design, implementation and maintenance.

Goal II. Demonstrate the ability to use the necessary hardware, protocols, and media to establish, maintain, and troubleshoot network connectivity between workstations.

Goal III. Assess weaknesses and strengths of network security while emphasizing bandwidth and availability.

Goal IV. Evaluate the different options of establishing a successful information technology data network.

Goal V. Demonstrate the ability to apply Transmission Control Protocol/Internet Protocol (TCP/IP) networking technology protocol and to subnet different Internet Protocol (IP) classes in order to meet the defined existing or future business environment.

Goal VI. Evaluate network security, integrity, and availability on a Local Area Network (LAN).

Goal VII. Explore the different Network Operating Systems (NOS) available today while emphasizing Microsoft (Windows NT 4 and 2000), Novell (Netware 4 and 5), and Unix.

Goal VIII. Select the best Network Operating System (NOS) for a specific business to meet its current and future needs.

Learner Requirements

1. At least once per week, participate in CourseRoom (online web-paged) discussion as indicated in each Learning Unit.
2. Complete all assignments as indicated in each Learning Unit.
3. Complete an Individual Project The project must demonstrate an understanding of the objectives of this course.

References

Learning Resources

Required texts and readings include:

- Dean, T. (2000). Network+ guide to networks. ISBN: 0-7600-1145-1.
- Lammle, Todd & Tedder, William (2002). Network+ Virtual Lab. , Alameda, CA. ISBN 0-7821-3026-7

This course utilizes a "hand on" approach to reinforce course concepts through a virtual lab simulator so you will be able to try out network commands that you otherwise could not experiment with on you own computer. You will also be able to prepare yourself for an industry standard certification test.

Unit 1 -- introduction to the basic concepts of a network.

Study Assignments:

1. If you have not already done so, please purchase the required textbook and lab simulator and any additional material you feel would be beneficial to the successful completion of this course.
2. Read chapter 1 and answer the review questions as a self-assessment.
3. Search the Internet for additional information that will reinforce the general concepts described in this unit. Be sure to spend at least one hour on this assignment. Share some of the links with your fellow learners.

4. Install the Network+ Virtual Lab software and work through the four review labs for chapter 1.
5. MediaCenter Assignment: Read the overview titled "Thinking Habits of Heart, Mind, and Imagination." Produce a one-paragraph analysis of this overview, delineating how this applies to your academic experience.
6. Complete the three Discussion Questions posted by your Instructor. Also, post responses to your fellow learners.

Unit 2 -- Networking Layers and Protocols

Study Assignments:

1. Read chapters 2 and 3 and answer the review questions as a self-assessment.
2. Go to http://www.webopedia.com/quick_ref/OSI_Layers.html, read the tutorial information, and go over some of the links related to the topic. Be sure to spend at least two hours on this assignment. Also, study the MediaCenter assignment entitled "An Example of OSI Layering."
3. Search the Internet for additional information that will reinforce the concepts outlined in these chapters. Share some of the links with your fellow learners. Be sure to post at least two of these links, along with a one-line sentence describing them.
4. Become familiar with the terms at the end of each chapter.
5. Read the short overview titled "TCP/IP and Protocols" in the MediaCenter.
6. Continue to work on your individual project.
7. Complete the three Discussion Questions posted by your Instructor. Also, post responses to your fellow learners.

Unit 3 - Network Architecture

Study Assignments:

1. Read chapter 4 and answer the review questions as a self-assessment.
2. Go to <http://www.anixter.com/techlib/vendor/cabling/d0503p02.htm>, read the tutorial information, and go over some of the links related to the topic. Be sure to spend at least one hour on this assignment.
3. Work through the Labs in Chapter 2 and Chapter 3 in the Virtual Lab Simulator, particularly the Hands-On Lab 3.5

4. Search the Internet for additional information that will reinforce the concepts outlined in this chapter. Share some of the links with your fellow learners. Be sure to post at least two of these links, along with a one-line sentence describing them.
5. Become familiar with the terms at the end of the chapter.
6. Read the overview titled "Media, Cable, Connectors, Max Segment Length" in the MediaCenter.
7. Complete the three Discussion Questions posted by your Instructor. Also, post responses to your fellow learners.

Unit 4 - Network Devices and Connectivity

Study Assignments:

1. Read chapters 5 and 6 and answer the review questions as a self-assessment.
2. Go to <http://www.webopedia.com/TERM/E/Ethernet.html>, read the tutorial information, and go over some of the links related to the topic. Produce a one-page synopsis of this information.
4. Search the Internet for additional information that will reinforce the concepts outlined in these chapters. Share some of the links with your fellow learners. Be sure to post at least two of these links, along with a one-line sentence describing them.
5. Become familiar with the terms at the end of each chapter.
6. Read the overview titled "Media, Cable, Connectors, Max Segment Length" in the MediaCenter.
7. Conduct research and produce a chart listing the current prices for a router, a hub a repeater, and a NIC suitable for home or small-business use.
8. Answer the Chapter 6 questions in the Virtual Lab.
9. Complete the three Discussion Questions posted by your Instructor. Also, post responses to your fellow learners.

Unit 5 - WAN Topologies and Remote Connectivity

Study Assignments:

1. Read chapter 7 and answer the review questions as a self-assessment.
2. Go to http://www.cisco.com/univercd/cc/td/doc/cisintwk/ito_doc/introwan.htm#xtocid1, read the tutorial information, and go over some of the links related to the topic. Produce a one-page synopsis of this information.

3. Search the Internet for additional information that will reinforce the concepts outlined in these chapters. Share some of the links with your fellow learners. Be sure to post at least two of these links, along with a one-line sentence describing them.
4. Become familiar with the terms at the end the chapter.
5. Go to <http://download.cnet.com/downloads/0-10071-100-895454.html> and download Netlab, a network tool. You can use this FREE tool to find out IP addresses, do DNS look-ups and more.
6. Answer the Chapter 7 review questions and do the two Hands-on labs in the Virtual Lab.
7. Complete the three Discussion Questions posted by your Instructor. Also, post responses to your fellow learners.

Unit 6 - Network Operating Systems - NT, Netware, and UNIX

Study Assignments:

1. Read chapters 8, 9, and 10 and answer the review questions as a self-assessment.
2. Go to the following links:
 - [Operating System - Webopedia.com](#)
 - [UNIX - Webopedia.com](#)
 - [Windows 2000 Technologies](#)
 - [NetWare 5 Overview and Installation - Novell Documentation](#)Read the tutorial information in the fourth link, and go over some of the links related to the topic. Produce a one-page synopsis of each network operating system.
3. Search the Internet for additional information that will reinforce the concepts outlined in these chapters. Share some of the links with your fellow learners. Be sure to post at least two of these links, along with a one-line sentence describing them.
4. Become familiar with the terms at the end of each chapter.
5. What NOS capabilities does Win XP possess? Search the Net and produce a chart of at least three capabilities.
6. Work through the hands on labs (all five) for chapter 5 in the Virtual Lab. There are exercises for each operating system. Also do the review lab covering these systems.

7. Complete the three Discussion Questions posted by your Instructor. Also, post responses to your fellow learners.

Unit 7 - TCP/IP Fundamentals and Implementation

Study Assignments:

1. Read chapter 11 and answer the review questions as a self-assessment.
2. Go to <http://www.learn2subnet.com/> or <http://www.howtosubnet.com/> and read the tutorial information. Go over the presentation to master the binary system, IP addressing, and IP subnetting. Make sure to spend at least four hours on this tutorial. This tutorial can be purchased on a CD directly from either site. Produce a one-page synopsis of this information with an example of a subnetted network.
3. Search the Internet for additional information that will reinforce the concepts outlined in these chapters. Share some of the links with your fellow learners. Be sure to post at least two of these links, along with a one-line sentence describing them.
4. Become familiar with the terms at the end of the chapter.
5. Read the overview titled "Subnetting" in the MediaCenter.
6. Continue to work on your individual project.
7. Complete the three Discussion Questions posted by your Instructor. Also, post responses to your fellow learners.

Unit 8 - Network Troubleshooting and Maintaining a Network

Study Assignments:

1. Read chapters 12 and 13 and answer the review questions as a self-assessment.
2. Search the Internet for additional information that will reinforce the concepts outlined in these chapters. Share some of the links with your fellow learners. Be sure to post at least two of these links, along with a one-line sentence describing them.
3. Become familiar with the terms at the end of each chapter.
4. Work through the Hands-on labs for Chapter 4 in the Virtual Lab and answer the lab 4 review questions. Also answer the review questions for Chapter 10 in the Virtual Lab.
5. Become familiar with the terms at the end of each chapter.

6. Go to <http://www.acterna.com/global/products/descriptions/LinkView/index.html> and download the LinkView Network Analyzer. This is a FREE demo program that will show you how to diagnose networks. Use it to view and analyze network traffic flowing to your PC.
7. Present three tools or network commands that you can use to diagnose a network problem (i.e. tracer). Specify the problem you would try to diagnose or solve with the tools. Include a discussion of your experience with the tools either from the Virtual Lab or the LinkView Analyzer. You may include scripts or traces that illustrate how the problem/s are analyzed.
8. Complete the three Discussion Questions posted by your Instructor. Also, post responses to your fellow learners.

Unit 9 - Network Integrity, Availability and Security

Study Assignments:

1. Read chapters 14 and 15 and answer the review questions as a self-assessment.
2. Search the Internet for additional information that will reinforce the concepts outlined in these chapters. Share some of the links with your fellow learners. Be sure to post at least two of these links, along with a one-line sentence describing them.
3. Become familiar with the terms at the end of each chapter.
4. Work through Chapter 8 Hands-on and the review questions in the Virtual Lab. Work through Chapter 9 review questions in the Virtual Lab.
5. There are several products on the market that provide firewall type protection and virus protection, etc. that are readily available for a modest price. It is assumed that you are using one of these products already, although you do not specifically have to buy one for this class. Several vendors are:
Zone Labs http://www.zonealarm.com/zap26_zs_grid.html
Symantec <http://www.symantec.com>
Mc Affee <http://www.mcafee.com>
Install one of these and write a one-page report describing your experience. Use the Shields Up tool both before and after installation of this firewall and report the results in your report.
6. Use the Shields Up! FREEware tool at <http://www.grc.com/> to run a security analysis of your PC,. Modify some parameters of your security product and re-run Shields Up

7. Complete the three Discussion Questions posted by your Instructor. Also, post responses to your fellow learners.

Unit 10 - Network Design Overview

Study Assignments:

1. Read chapter 16 and answer the review questions as a self-assessment.
2. Go to <http://www.webopedia.com/Networks/Security/> and read the tutorial information. Go through the different links and read the different topics related to top security. Produce a one-page synopsis of this information.
3. Go to <http://www.panicware.com/3> and download their anti-spam product, Pop-up Stopper. Install this product and use it for a short while. Then, produce a one-page report on how easy it was to install, configure, and operate and how effective it was.
4. Become familiar with the terms at the end of the chapter.
5. Go to: <http://download.com.com/3000-2192-10152793.html?tag=lst-0-1> and download LanFlow 3.5, a FREE network design product. Produce a one-page report on how easy it was to install, configure, and operate.
6. Complete the three Discussion Questions posted by your Instructor. Also, post responses to your fellow learners.

Conclusion

As can be seen, Capella University had a need for introducing more interactivity into a text-based class. To this end, research was conducted to locate interactive resources such as hands on exercises that might allow a learner to be provided with a hands on experience, not just reading a section of text and answering some questions afterward. Many Net-based resources were located and integrated into this class as well as the use of a Network Simulation tool which the learners purchase and then utilize throughout the class. Learners now report a much improved learning environment due to these changes.