

Syllabus

EDTECH 552: Introduction to Network Administration (Spring 2011)

Instructor: Jui-long Hung, Ed.D.

Email: andyhung@boisestate.edu

Phone: (208) 426-5542

Office Hours: 13:00-15:00 (Tue, Wed, & Thu)

Conceptual Framework

Online presentation: <http://breeze.boisestate.edu/ncate/>

College of Education - The Professional Educator

Boise State University strives to develop knowledgeable educators who integrate complex roles and dispositions in the service of diverse communities of learners. Believing that all children, adolescents, and adults can learn, educators dedicate themselves to supporting that learning. Using effective approaches that promote high levels of student achievement, educators create environments that prepare learners to be citizens who contribute to a complex world. Educators serve learners as reflective practitioners, scholars and artists, problem solvers, and partners.

Department of Educational Technology Mission

The Department of Educational Technology supports the study and practice of facilitating and improving learning of a diverse population by creating, using, managing, and evaluating appropriate technological processes and resources. Believing technology is a tool that enhances and expands the educational environment, we promote the use of current and emergent technologies for teaching and learning in a dynamic global society. Educational technologists are leaders and innovators, serving in institutions of higher education, public or private school settings, federal, state, or local educational agencies, and educational organizations in the private sector.

Course Description

Introduction

This course is ideal for learners who have not obtained a CCENT¹ or CCNA certificate. It is designed to provide students with reading and laboratory experience in current and emerging networking technology that will prepare them for the CCENT, a part of the Cisco Certified Networking Associate (CCNA) exam. The intention of the CCNA 1 curriculum is to engage beginning students in the field of networking; to master certain basic concepts essential for success and to perform entry-level tasks in the planning, design, installation, operation and troubleshooting of Ethernet and TCP/IP networks. Instruction includes Networking Terminology and protocols, local area networks (LANs), wide-area networks (WANs), Open

System Interconnection (OSI) models, cabling, cabling tools, routers, router programming (configuring), Ethernet, Internet Protocol (IP) addressing and network standards.

Course Objectives

Each student will be able to:

- Perform simple PC (hardware, software, network settings) and NIC troubleshooting
- Perform binary math
- Properly utilize the information and bandwidth units
- Name and describe the OSI layers from memory
- Describe the TCP/IP graph
- Describe the devices required to build a LAN
- Build and troubleshoot a simple LAN
- Describe networking signals and what can happen to them on physical media
- Use a multimeter to measure resistance, voltage, and continuity
- Describe the 5 basic types of networking media
- Properly terminate CAT 5 UTP cable according to standards
- Given a topology, circle all collision and broadcast domains
- Describe the basic elements of a frame
- Perform hexadecimal math
- Compare and contrast Token Ring, FDDI, and the Ethernet family tree
- Explain the specific details of Ethernet and Layer 2 Devices
- Use 'Network Inspector' (or equivalent) and 'Protocol Inspector' (or equivalent) software
- Create physical and logical topologies
- Properly locate MDFs and IDF's in an Ethernet extended star topology
- Plan a structured cabling installation
- Install, terminate, test, and troubleshoot CAT 5 UTP cabling runs, from the jack to the patch panel
- Use the Fluke 620 (or equivalent) meter
- Justify the need for and classify the various types of IP addresses
- Perform subnet calculations
- Perform the following form of problem: "Given an IP address and the number of subnets required, find the subnetwork id numbers, the range of host numbers, the subnetwork broadcast numbers, and the subnet mask
- Provide a basic explanation of routing
- Flowchart basic network processes such as ARP and RARP
- Explain the similarities and differences between IP, TCP, and UDP
- Explain the basic processes of the session layer
- Describe the presentation layer functions of formatting, encryption, and compression
- Explain how e-mail and HTTP work

Course Materials

Books

Required Text:



Odom, W. (2007). CCENT/CCNA ICND1 Official Exam Certification Guide (2nd Ed.). Cisco Press. ISBN: 1587201828

Suggested Text:

Networking knowledge is required skills for technology coordinator. This course covers content of the Cisco CCENT (Cisco Certified Entry Networking Technician) exam (640-822 ICND1). I strongly encourage you to get the certificate after finishing this course. If you need more books for exam preparation, I recommend the following books:

1. Odom, W. & Knott, T. (2006). Networking Basics: CCNA 1 Companion Guide. Cisco Press. ISBN: 1587131641
2. Lammler, T. (2008). CCENT: Cisco Certified Entry Networking Technician. Sybex. ISBN: 0470247029

System Requirements:

We use Cisco Packet Tracer for all lab activities. It is a simulation application which allows users to configure and validate network architecture. Packet Tracer is only compatible with the following platforms: Windows, Windows XP; Vista (Vista Basic, Vista Premium); Windows 7; and Linux (Ubuntu, Fedora).

Major Assignments

Chapter Exercises and Lab Tasks

You will submit exercises and lab tasks after reading each chapter.

WWW Server & Personal Website Setup

You will set up an Apache server for PHP+MySQL applications.

Grading Policy and Grading Scale:

Course Grade

Assignments are typically due by 11:59 PM Mountain Time on Wednesdays. The chapter assignments and participation will account for approximately two third the course grade; Final Exam and WWW server activity will account for the remaining one third.

Assignment List	Points
Assignment 1	50
Assignment 2	50
Assignment 3	50
Assignment 4	50
Assignment 5	50
Assignment 6	50
Assignment 7	50
Participation	50
Server & Personal Website	100
Final Exam	100
Total	600

Grades at the end of the course will be determined by the point scale shown in the table below.

Scale:

90 – 99% A

80 – 89% B

70 – 79% C

< 70% F

Point Scale for Final Grades:	
Grade	Points Required
A+	580 – 600
A	560 – 579
A-	540 – 559
B+	520 – 539
B	500 – 519
B-	480 – 499
C+	460 – 479
C	440 – 459
C-	420 – 439
F	0 – 419

Late Work Policy:

Late work will have a penalty of 10% taken off for each day late. Work that is more than one week late will not be accepted. Due dates falling within the last two weeks of class are final and those assignments may not be submitted late. Plan to spend between 8 - 15 hours per week on this class.

Communication:

I typically respond to e-mail twice per day Monday through Friday except for holidays, BSU break, or during other unavoidable situations that sometimes come up (e.g. MLK day, spring

break, power failure, out of town presenting a paper, etc.). If you send an e-mail during the week you should typically have a reply within 24 hours unless it is late Friday or the weekend. I catch up on weekend e-mail on Mondays. If you do not received a reply to your e-mail within a reasonable period of time please send it again. Sometimes e-mail is captured by SPAM filters, is addressed incorrectly, or just simply does not make it through. Also, check your own e-mail filters that screen out junk mail. In the past, my replies to students have sometimes been filtered out and they did not receive them until they checked the junk e-mail box.

Standards Addressed

The evaluation criteria is based on ISTE National Educational Technology Standards (NETS) for Administrators 2009

1. Visionary Leadership

Educational Administrators inspire and lead development and implementation of a shared vision for comprehensive integration of technology to promote excellence and support transformation throughout the organization. Educational Administrators:

- a. Inspire and facilitate among all stakeholders a shared vision of purposeful change that maximizes use of digital-age resources to meet and exceed learning goals, support effective instructional practice, and maximize performance of district and school leaders.
- b. Engage in an ongoing process to develop, implement, and communicate technology-infused strategic plans aligned with a shared vision.
- c. Advocate on local, state and national levels for policies, programs, and funding to support implementation of a technology-infused vision and strategic plan.

2. Digital Age Learning Culture

Educational Administrators create, promote, and sustain a dynamic, digital-age learning culture that provides a rigorous, relevant, and engaging education for all students. Educational Administrators:

- a. Ensure instructional innovation focused on continuous improvement of digital-age learning.
- b. Model and promote the frequent and effective use of technology for learning.
- c. Provide learner-centered environments equipped with technology and learning resources to meet the individual, diverse needs of all learners.
- d. Ensure effective practice in the study of technology and its infusion across the curriculum.
- e. Promote and participate in local, national, and global learning communities that stimulate innovation, creativity, and digital-age collaboration.

3. Excellence in Professional Practice

Educational Administrators promote an environment of professional learning and innovation that empowers educators to enhance student learning through the infusion of contemporary technologies and digital resources. Educational Administrators:

- a. Allocate time, resources, and access to ensure ongoing professional growth in technology fluency and integration.
- b. Facilitate and participate in learning communities that stimulate, nurture and support administrators, faculty, and staff in the study and use of technology.
- c. Promote and model effective communication and collaboration among stakeholders using digital-age tools.
- d. Stay abreast of educational research and emerging trends regarding effective use of technology and encourage evaluation of new technologies for their potential to improve student learning.

4. Systemic Improvement

Educational Administrators provide digital-age leadership and management to continuously improve the organization through the effective use of information and technology resources. Educational Administrators:

- a. Lead purposeful change to maximize the achievement of learning goals through the appropriate use of technology and media-rich resources.
- b. Collaborate to establish metrics, collect and analyze data, interpret results, and share findings to improve staff performance and student learning.
- c. Recruit and retain highly competent personnel who use technology creatively and proficiently to advance academic and operational goals.
- d. Establish and leverage strategic partnerships to support systemic improvement.
- e. Establish and maintain a robust infrastructure for technology including integrated, interoperable technology systems to support management, operations, teaching, and learning.

5. Digital Citizenship

Educational Administrators model and facilitate understanding of social, ethical and legal issues and responsibilities related to an evolving digital culture. Educational Administrators:

- a. Ensure equitable access to appropriate digital tools and resources to meet the needs of all learners.
- b. Promote, model and establish policies for safe, legal, and ethical use of digital information and technology.
- c. Promote and model responsible social interactions related to the use of technology and information.
- d. Model and facilitate the development of a shared cultural understanding and involvement in global issues through the use of contemporary communication and collaboration tools.

Accommodations

To request academic accommodations for a disability, contact the Office of Disability Services, Admin 114, (208) 426-1583. Students are required to provide documentation of their disability and meet with a Disability Specialist prior to receiving accommodations. Information about a disability or health condition will be regarded as confidential.