

Syllabus

EDTECH 552: Operation Systems and Networks (Spring 09)

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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 CCENT 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 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:



1. Odom, W. (2007). CCENT/CCNA ICND1 Official Exam Certification Guide (2nd Ed.). Cisco Press. ISBN: 1587201828
2. Frazier, M. & Bailey, G. D. (2004). The Technology Coordinator's Handbook. ISTE. ISBN: 1564842118

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. Lammle, T. (2008). CCENT: Cisco Certified Entry Networking Technician. Sybex. ISBN: 0470247029

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 a WWW server to store your personal website.

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 NETS for Technology Leadership Standards.

TL-V Productivity and Professional Practice

Educational technology leaders design, develop, evaluate and model products created using technology resources to improve and enhance their productivity and professional practice.

Educational technology leaders:

- A. Use technology resources to engage in ongoing professional development and lifelong learning. Candidates:
 - 1. design, prepare, and conduct professional development activities to present at the school/district level and at professional technology conferences to support ongoing professional growth related to technology.
 - 2. plan and implement policies that support district-wide professional growth opportunities for staff, faculty, and administrators.

- B. Continually evaluate and reflect on professional practice to make informed decisions regarding the use of technology in support of student learning. Candidates:
 - 1. based on evaluations make recommendations for changes in professional practices regarding the use of technology in support of student learning.

- C. Apply technology to increase productivity. Candidates:
 - 1. model the integration of data from multiple software applications using advanced features of applications such as word processing, database, spreadsheet, communication, and other tools into a product.
 - 2. create multimedia presentations integrated with multiple types of data using advanced features of a presentation tool and model them to district staff using computer projection systems.
 - 3. document and assess field-based experiences and observations using specific-purpose electronic devices.
 - 4. use distance learning delivery systems to conduct and provide professional development opportunities for students, teachers, administrators, and staff.
 - 5. apply instructional design principles to develop and analyze substantive interactive multimedia computer-based instructional products.

6. design and practice strategies for testing functions and evaluating technology use effectiveness of instructional products that were developed using multiple technology tools.
 7. analyze examples of emerging programming, authoring or problem-solving environments that support personal and professional development, and make recommendations for integration at school/district level.
 8. analyze and modify the features and preferences of major operating systems and/or productivity tool programs when developing products to solve problems.
- D. Use technology to communicate and collaborate with peers, parents, and the larger community in order to nurture student learning. Candidates:
1. model and implement the use of telecommunications tools and resources to foster and support information sharing, remote information access, and communication between students, school staff, parents, and local community.
 2. organize, coordinate, and participate in an online learning community related to the use of technology to support learning.
 3. organize and coordinate online collaborative curricular projects with corresponding team activities/responsibilities to build bodies of knowledge around specific topics.
 4. design, modify, maintain, and facilitate the development of Web pages and sites that support communication and information access between the entire school district and local/state/national/international communities.

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.