

# IS 280 – Data Communications Systems

## Course Syllabus and Calendar – Winter 2006

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Brigham Young University Hawaii

### 1 Course Overview

It is hard to imagine a world without the Internet. Networking has made the sharing of information fast. We get emails and instant messages with pictures attached instead of waiting days for postal delivery. We register “online” for classes instead of waiting “in line” to pull computer cards. We buy worldwide from ebay instead of our local bulletin board.

The world wants to be connected. It needs workers with technical skills. This course is focused on those skills: creating wiring, connecting computers, and making networks.

#### 1.1 Network+ Certification

Grading is based overwhelmingly on your performance on the CompTIA Network+ Certification exam. To prepare for this test we study a fifty-hour online course developed by TestOut. The course includes both reading and listening to short video clips. You can do it from the GCB, the library, and maybe other places.

CompTIA Network+ is a vendor-neutral certification exam. A vendor is a company that sells things, in this case computer equipment or software. Examples include Microsoft, Cisco, Novell, and Red Hat. Many certification exams are vendor-specific, and test your abilities with, for example, Cisco equipment. CompTIA’s Network+ exam covers information relevant to many or all vendors.

This course will prepare you to take other courses in the IS department. IS 386 Computer Network Servers and IS 389 Computer Network Design build on your knowledge from IS 280. In IS 386 you can develop skill and experience configuring and operating network servers. In IS 389 you can develop skill and experience configuring networking equipment such as switches, routers, and gateways.

#### 1.2 Prerequisites

If you are an IS student, the prerequisite is IS 110 (Fundamentals of Information Systems). The purpose for this prerequisite is to ensure that you have the big picture of why networking is important and how it supports businesses and other organizations in achieving their goals.

If you are a CS student, the prerequisite is waived.

It is helpful if you have completed the IS 250L course covering computer hardware and the Microsoft Windows operating system.

#### 1.3 The Course

- **Course Number:** IS 280
- **Title:** Data Communications Systems
- **Web:** <http://colton.byuh.edu/courses/is280/>
- **Required Equipment:** earphones, headphones, or headset suitable for listening to sound from a computer. These are commonly available in the \$10 price range.
- **Recommended Text:** *Network+ Guide to Networks / 3e*, by: Tamara Dean. ISBN 0-619-21313-2.
- **Recommended Text:** *Network+ Guide to Networks / 4e*, by: Tamara Dean. ISBN 0-619-21743-X. Updated for 2005 exam.
- **Recommended Text:** *Lab Manual for Network+ Guide to Networks / 4e*, by: Michael Grice. ISBN 0-619-21744-8.
- **Class Time:** MWF 10:00–10:50 AM  
Final Exam: Wed 26 Apr, 11:00–2:00 PM  
Classroom: GCB 140

#### 1.4 The Instructor

- **Instructor (me):** Don Colton
- **My email:** don@colton.byuh.edu
- **My Office:** GCB 130 B
- **Office Hours:** Daily 11:00–11:50 AM

## 1.5 Tutoring

- **T.A.:** Barry Bjork, or ask CS tutors
- **T.A. Hours:** Posted Evenings
- **T.A. Location:** usually GCB 143

## 1.6 My Open-Door Policy

My office hours are shown above. You can contact me by email to make an appointment at another time. I also have an open-door policy: **If my door is open (even just a bit) feel free to knock and come in.**

## 1.7 Subject to Change

It is possible that I will revise some aspects of the course as we go along. Any changes I make are likely to be to your advantage. If any of my changes seems unfair to you, let me know. I will try to correct it.

## 1.8 Special Needs

Brigham Young University Hawaii is committed to providing a working and learning atmosphere, which reasonably accommodates qualified persons with disabilities. If you have any disability that may impair your ability to complete this course successfully, please contact the students with Special Need Coordinator, Leilani A'una at 293-3518. Reasonable academic accommodations are reviewed for all students who have qualified documented disabilities. If you need assistance or if you feel you have been unlawfully discriminated against on the basis of disability, you may seek resolution through established grievance policy and procedures. You should contact the Human Resource Services at 780-8875.

## 1.9 Preventing Sexual Harassment

Title IX of the education amendments of 1972 prohibits sex discrimination against any participant in an educational program or activity that receives federal funds, including Federal loans and grants. Title IX also covers student-to-student sexual harassment. If you encounter unlawful sexual harassment or gender-based discrimination, please contact the Human Resource Services at 780-8875 (24 hours).

## Winter 2006 Course Calendar

day	Date			TG	
1	Wed	Jan	11	12	
2	Fri	Jan	13	14	test
hol	Mon	Jan	16	-	
3	Wed	Jan	18	16	
4	Fri	Jan	20	18	test
5	Mon	Jan	23	20	
6	Wed	Jan	25	22	
7	Fri	Jan	27	24	test
8	Mon	Jan	30	26	
9	Wed	Feb	1	28	
10	Fri	Feb	3	30	test
11	Mon	Feb	6	32	
12	Wed	Feb	8	34	
13	Fri	Feb	10	36	test
14	Mon	Feb	13	38	
15	Wed	Feb	15	40	
16	Fri	Feb	17	42	test
hol	Mon	Feb	20	-	
17	Wed	Feb	22	44	
18	Fri	Feb	24	46	test
19	Mon	Feb	27	48	
20	Wed	Mar	1	50	
21	Fri	Mar	3	52	test
22	Mon	Mar	6	54	
23	Wed	Mar	8	56	
24	Fri	Mar	10	58	test
25	Mon	Mar	13	60	
26	Wed	Mar	15	62	
27	Fri	Mar	17	64	test
28	Mon	Mar	20	66	
29	Wed	Mar	22	68	
30	Fri	Mar	24	70	test
hol	Mon	Mar	27	-	
31	Wed	Mar	29	72	
32	Fri	Mar	31	74	test
33	Mno	Apr	3	76	
34	Wed	Apr	5	78	
35	Fri	Apr	7	80	test
36	Mon	Apr	10	82	
37	Wed	Apr	12	84	
38	Fri	Apr	14	86	test
39	Mon	Apr	17	88	
40	Wed	Apr	19	90	test
fin	Wed	Apr	26	92	final 11-2

TG is the TestOut Goal for that day. If you have previously achieved that score in TestOut, you are excused from attending.

## 2 Grading

The only way to get an A is to pass the Network+ test. There are no grades of A-. **Free Test Voucher:** If you get three TestOut scores of 95 or above, and you agree to take the CompTIA Network+ Exam and bring me your results, I will give you one voucher to take the test. The IS department measures itself in part by the number of students that pass certification tests. It is a form of self assessment, so the department pays for the tests.

Grading for B+ and lower is based on a point scale.

94+	B+
86-93	B
80-85	B-
74-79	C+
66-73	C
60-65	C-
54-59	D+
46-53	D
40-45	D-
0-39	F or UW

The biggest part of your grade will be your “third highest TestOut score” on the Network+ TestOut ExamSim. Each Friday (see the course calendar) is test day. On test days, you may, but are not required, to do the Network+ TestOut ExamSim in class under my supervision. Normally the ExamSim allows you one hour, but you will be limited to the actual class period (10:00 to 10:50). During the final exam time you may take TestOut as many times as you would like but you are limited to one hour each, and to the actual final exam period. The number of TestOut points toward your grade will be the best score you achieved at least three times during the semester. Example: if your top three scores are 92%, 93%, and 99%, you get 92 points.

**Extra credit:** Points are awarded for some activities, such as those listed here.

### Some Extra Credit Activities

pts	activity
2	NetDIMES activity
2	make perfect cable 1
2	make perfect cable 2
2	perfect score on binary quiz
4	perfect score on IPv4 quiz
2	perform wireless site survey

**Penalties:** Points are deducted for each unexcused absence. (If you come in after I call roll, make

sure I notice you.) Missed classes before Jan 18 are automatically excused. Missed classes when you are sick and you bring a note from the doctor are excused. Missed classes due to school business with an official note are excused. You get three free absences for any reason. After all that, the penalties start, two points per day.

On the course calendar, “TG” is the TestOut Goal for that day. If you have previously achieved that score in TestOut, officially measured in class, you are excused if you decide to be absent for any reason. I figure you are doing fine on your own.

Example: Fred prepares really hard. He takes TestOut on Jan 20 and earns an official score of 50 (wow). Fred is excused (allowed to be absent whenever he wants) until Mar 3 with no penalty. Starting Mar 3 he must attend or have a higher official TestOut score to avoid penalties.

## 3 Daily Class Routine

There will be some lecture and in-class labs, but most of your class time will be spent quietly working on TestOut. Headphones are required equipment.

On most days, after I call roll and make any announcements, I will ask if you have any questions. This is a good time to bring up anything in your reading or study that is confusing to you or your friends.

On some days extra-credit activities will occur, such as cable construction or network configuration. You are strongly encouraged but not required to participate in these activities.

If you are not excused, you are expected to spend your class time working on class-related activities. Substantial focus on non-course activities, such as arriving late, leaving early, doing homework for other classes, personal email, chat, or web browsing, may be treated as 2-point absence or 1-point partial absence.

## 4 Preparing for Network+

The Network+ exam includes lots of memorization and vocabulary, and some “derived knowledge.”

Note on overtraining: Memorize the knowledge, not the answers. There is a temptation to simply recognize the question by its shape or a few words in it, and to know that the third bubble is correct. This is called “overtraining.” Avoid that temptation. It will not help you on the Network+ exam. You should

read each question. Think about it. Read the answers. Then mark the correct answer.

## 5 Expected Outcomes

This course is intended to give students an understanding of networking and telecommunications. The expected outcomes for this course are that the student will be able to do the following.

1. Explain the history of networks, and the Internet.
2. Explain the different objects, media, and devices necessary for telecommunications, including local and wide area networks.
3. Explain how to install the equipment necessary to implement a telecommunication system, e.g., cables, modems, Ethernet connections, hubs, switches, and gateways.
4. List network architectures, topologies, and protocols.
5. Identify network standards and standardization bodies.
6. Explain logical addressing (IPv4), subnetting, network classes, private IP addresses, and MAC addresses.
7. Design, install, configure, and manage a simple LAN, install services, and connect the LAN to the Internet. (This outcome may be better associated with the IS250L or IS386.)
8. Identify common network services including: file, print, mail, communication, and Internet services.
9. Identify the importance of DHCP and DNS servers.
10. Identify the responsibilities inherent in providing network services including: security, privacy, reliability, and performance.
11. Explain the economics of networks in organizations, e.g., total cost of ownership, and cost-benefit analysis.
12. Demonstrate the use of common network applications such as: SSH, Telnet, FTP, remote access, e-mail, and IP telephony.
13. Demonstrate how to use TCP/IP utilities like: ping, trace route, netstat, nslookup, whois, ipconfig, and ifconfig.