Information Systems Infrastructure and Networks

Overview

In this course, you will learn about business data communication concepts, infrastructure, architectures, components, protocols and standards. You will also learn how data communications, and new data communication concepts, can be used increase an organization's competitive position.

In addition to a focus on evolving business concepts, the course includes and introduction to packet orientated communication processes and models. The combination of business and technical concepts is designed to facilitate a firsthand understanding of how the evolution of data communications impacts the competitive environment of all modern organizations.

Class lectures are augmented by active learning modules. These active modules provide an opportunity for students to apply and demonstrate related concepts.

Learning Objectives

At the end of this course, you will be able to:

1. Explain how the continuing evolution of modern data communications continues to impact the current competitive environment.
2. Explain why modern layered communication models, such as TCP/IP, OSI/ISO, dominate digital communications.
3. Describe how layered models enable different networks to share resources.
4. For each layer, of both the ISO/OSI and TCP/IP model, describe its purpose, major protocols, and governing standard organizations.
5. List and explain major standards organizations including the IEEE, Internet Society, IETF, IANA, ITU, ANSI, EIA/TIA.
6. List and define communication system components, including clients, servers, wired and wireless communication devices, related software, and specialized security devices.
7. Explain how major network devices communicate with each other.
8. Explain relevant TCP/IP application protocols including DNS, HTTP, SIP, RTP and SMTP.
9. List and explain the function of lower level protocols including ARP and DHCP.
10. Demonstrate protocol analysis as a method for network troubleshooting, and problem solving.
11. List and explain evolving technologies impacting business data communications including virtualization and cloud computing.
12. Compare and contrast wired and wireless networking.
13. Explain TCP/IP related security issues.
14. Compare and contrast IPv4and IPv6.
15. Name the different architectures that a network may have.
16. Describe IP addressing.
17. Demonstrate troubleshooting with basic TCP/IP utilities.

Resources: Textbooks

Business Data Communications and Networking, 11th e, Jerry FitzGerald & Alan Dennis, by Wiley, ISBN:978-1118-086834
Note, 12th edition of this text is also acceptable.

Computer Networking Principles, Protocols, and Practice, 1ST & 2nd Editions, Olivier Bonaventure, Open Source, Saylor.org 2015
http://cnp3book.info.ucl.ac.be/ *Checked 17 Jan*

Text readings supplemented with selections from Academic Journals and other relevant sources.

Grading

Final grades determined through a weighted average that is projected to include exams, "Hands On" Activities, an online assignment portfolio and an online learning portfolio.

Exams & Quizzes	65%
Online Activities/Portfolio	20%
Learning Portfolio	15%

Hybrid Class Attendance

Attendance is expected at all class meetings. As expected in a hybrid class, there will be regular (weekly) assignments. These assignments will include readings as well as active assignments. While most assignments will be posted on the class website, assignments may also be distributed, or modified, in class. Any content covered in class, or in an assignment should be considered testable.

Exams

As specified in the class schedule, there will be four in class exams. If you miss one exam, you will be able to take a makeup exam during the scheduled final exam period, **Note** It is only possible to makeup one exam. Anyone not confident of being present for the remainder of the exams should consider dropping. In extreme circumstances, early exams may be arranged.

Acceptable Class Behaviors

It is inappropriate to eat your dinner in class. Students that need to eat during class time are welcome to eat in the hallway. Exceptions made for any student that brings enough food for the whole class.

During class, mobile phones and pagers should have their audible alarms turned off. Failure to observe this rule demonstrates a lack of respect for your

classmates. Repeated failures will be asked to leave the class. If you need to talk on your phone, you should do that in the hallway.

Students are expected to be on time for classes. Students that need to leave the class early are expected to do so in a way that minimizes disruptions.

Class	Information Systems Infrastructure and Networks
Bldg. T Rm 101, Tuesday, 5:30 – 7:00 Bldg CBB Rm 124, Tuesday, 7:00 – 8:30	CIS 3347, Hybrid Sections 16404, 19968
Instructor	**Office**
Ed Crowley	Bldg. T2, Room 331
Phone: 713-743-4096 E-mail: ecrowley@uh.edu	Office hours 2:15 -- 3:45 Monday 3:00 – 5:15 Tuesday *Other hours by appointment.*

Table One: Class Information

Online Support

This class will have both an online support site as well as an online resource. All questions that you have concerning the class should be posted online. Sending an email to the instructor concerning the class, implies consent to have that email posted to the forum. The support site will link to the online resource.

Disabilities

The University of Houston System complies with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990, pertaining to the provision of reasonable academic adjustments/auxiliary aids for students who have a disability. In accordance with Section 504 and ADA guidelines, University of Houston strives to prove reasonable academic adjustments/auxiliary aids to students who request and require them. If you believe that you have a disability requiring an academic adjustments/auxiliary aid, please contact Center for Students with DisABILITIES.

Data Communications Projected

Textbook Reading/Exam Schedule

Date	Business Data Communications & Networking
Week 1 17 Jan	Class Overview Chapter 1, Introduction (BDC&N) Part 1, Computer Networking Principles, Protocols, and Practice 1st Edition (http://cnp3book.info.ucl.ac.be/1st/html/) Portfolio Overview
Week 2 24 Jan	Chapter 2 Application Layer (BDC&N) Part 2, Computer Networking Principles, Protocols, and Practice 1st Edition (http://cnp3book.info.ucl.ac.be/1st/html/)
Week 3 31 Jan	Chapter 3, Physical Layer (BDC&N)
Week 4 7 Feb	Exam One (Chapters 1, 2. and 3. Parts 1 and 2.) Wireshark Exercise & Outside Reading
Week 5 14 Feb	Chapter 4, Data Link Layer (BDC&N) Part 6, Computer Networking Principles, Protocols, and Practice 1st Edition (http://cnp3book.info.ucl.ac.be/1st/html/)
Week 6 21 Feb	Chapter 5, Network and Transport Layers (BDC&N) Parts 4 & 5, Computer Networking Principles, Protocols, and Practice 1st Edition (http://cnp3book.info.ucl.ac.be/1st/html/)
Week 7 28 Feb	Project or Outside Reading Chapter 6, Wired and Wireless Local Area Networks (BDC&N)
Week 8 7 March	Exam 2 (Chapters 4, 5, and 6. Parts 4, 5, 6.) After exam, Chapter 7, Backbone Networks
Week 9 14 March	Chapter 8, Wide Area Networks (BDC&N) (*Spring Break 13-18 March, No F2F Class!)*
Week 10 21 March	Chapter 9, The Internet (BDC&N)
Week 11 28 March	Chapter 10, Network Security (BDC&N)
Week 12 4 April	Exam Three (Chapters 7, 8. 9, and 10) Chapter 11, Network Design (BDC&N)
Week 13 11 April	Wireless Communications Lecture One
Week 14 18 April	IoT/Mobile Cloud Lecture 23 – 26 Nov Thanksgiving Break
Week 15 25 April	Exam Four (Chapters 11, Instructor's Wireless, and IoT/Cloud)
Final Exam Week	Week of 2 May To be discussed …

Note One *Schedule subject to change.*

Note Two *In addition to textbook readings, there will be outside readings as well as regular homework and in class assignments. You can expect weekly assignments to be posted to the online class support site.*