ENTC 435 Data Communications, Spring 2012

Concepts and techniques involving signal encoding, error detection and correction, data link control, multiplexing and spread spectrum, switching, data compression, data security, internet protocol (IP), transmission control protocol (TCP); includes development of a data link control layer and a client server system utilizing socket by using C Programming Language in Visual C++ environment.

Prerequisites: ENTC 315 and ENTC 369 (C or better).

Learning Outcomes:

- To implement data link control functions using high level language (HLL)
- To implement functions of a client-server system
- To distinguish between different data encoding techniques
- To be able to correct a piece of corrupted encoded data
- To be able to calculate time required in different switching techniques
- To be able to fragment and reassemble IP packets
- To be able to calculate throughput of TCP segments
- To be able to compress large data-sets and decompress compressed data
- To be able to encrypt plain data-sets and decrypt cipher data

References:

- Data and Computer Communications – William Stallings (8th Edition) {**WS**}
- Understanding Communications and Networks – William A. Shay (3rd Edition)
- Data Communications and Networking - B. A. Forouzan (3rd Edition)

Tentative Course Schedule

	Topic	Reading	Comments
Week 1	Introduction	**WS** Chapter 1, 2 & 3	Lab Orientation
Week 2	Data Link Control (D)	**WS** Chapter 7	Lab Assignment 1
Week 3	Errors – Detection/Correction (D)	**WS** Chapter 6	(Data Link Layer)
Week 4	Signal Encoding (P)	**WS** Chapter 5	
Week 5	Multiplexing & SS (P)	**WS** Chapters 8 & 9	

Week 6	Switching (P)	**WS** Chapter 10	
Week 7	Midterm		Lab Assignment 2
Week 8	Client-Server System (A)	Chapter 12-Shay, Chapter 24- Forouzan	(Client Server System)
Week 9	ATM(D)	**WS** Chapter 11	
Week 10	Internetwork Protocols (N)	**WS** Chapter 18, Chapter 11- Shay	
Week 11	UDP (T)	**WS** Chapter 20	
Week 12	TCP (T)	**WS** Chapter 20	
Week 13	Data Compression	Chapter 5, Shay	Lab Assignment 3 (Tentative)
Week 14	Data Encryption	Chapter 7, Shay	(Bridge in Hardware)
Week 15	Final Examination		

D - Data Link Layer, A – Application Layer, P – Physical Layer, N – Network Layer, T - Transport Layer

Assessment and Tentative Weight Distribution:

Examination (Midterm - week7, Endterm – week15): 25% +25%, Homework – week 5, 10, 14: 25%

Laboratory – 25% (carries 2.5% weight for attendance, cleanliness, and safety), date of demonstration of the completed exercise will be fixed in consultation with the groups, failure to appear on the day will be considered as absent for that exercise, university approved absences are considered.

Attendance Policy: Full attendance is expected (late submission of homework will be considered only with university approved absences).

Rule 7: http:// student-rules.tamu.edu/rule07.

Tentative grading scale: A (85 and above), B (75 – 84), C (65 – 74), D (55 – 64), F (below 55).

Instructor: M. Z. Hasan, hasan@entc.tamu.edu, 979 845 7981, FERM 301

Lectures: MWF (10:20 A.M. – 11:10 A.M.), Thompson 122

Office hours: After the lecture class

Laboratory: Monday (8:00 A.M. – 9:50 A.M.), (1:00 P.M. – 2:50 P.M.), Thompson 101A

Change Notifications: Any change will be notified during the lecture or laboratory class

Expected efforts: For every lecture, you are expected to put in two hours of your own effort

Americans with Disabilities Act (ADA) Policy Statement

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, in Cain Hall, Room B118, or call 845-1637. For additional information visit http://disability.tamu.edu.

Academic Integrity Statement and Policy

For the Aggie Honor Code, please refer to the Honor Council Rules and Procedures on the web: http://www.tamu.edu/aggiehonor.)

"An Aggie does not lie, cheat or steal, or tolerate those who do."