

***KING FAHD UNIVERSITY OF PETROLEUM & MINERALS  
COLLEGE OF COMPUTER SCIENCES & ENGINEERING***

***COMPUTER ENGINEERING DEPARTMENT***

**COE 342 Data Communications  
Syllabus - Term 012**

**Catalog Description**

Introduction to data communication. Overview of the OSI model. Frequency response, bandwidth, filtering, and noise. Fourier series and transform. Information theory concepts such as Nyquist theorem, Shannon theorem, and Sampling theorem. Analog and digital modulation techniques. Pulse Code Modulation (PCM). Communication systems circuits and devices. Data encoding. Physical Layer Protocols. Data Link Control (point to point communication; design issues; link management; error control; flow control). Multiplexing and Switching. Introduction to LAN Technology.

***Corerequisite STAT 319***

**Instructor** Dr. Aiman H. El-Maleh. Room: 22/318 Phone: 2811 Email: aimane

**Office Hours** SMW 11:00-11:40; 2:00-3:00 (and by appointment)

**Course URL** [www.ccse.kfupm.edu.sa/~aimane/coe342](http://www.ccse.kfupm.edu.sa/~aimane/coe342)

**Text Book:** William Stallings, ``Data and Computer Communications'', Prentice Hall International, 6th Edition, 2000.

**Grading Policy**

Programming Assignments	15%
HWs & Quizzes	15%
Exam I	20%
Exam II	20%
Final	30%

**Course Topics**

1. ***Introduction (Chapters 1 & 2)*** **5 lectures**  
Communication Model. Data Communications Networking. TCP/IP Protocol and OSI Model.
2. ***Data Transmission (Chapters 3 & 4)*** **9 lectures**  
Concepts and Terminology. Analog and Digital Transmission. Transmission Impairments. Transmission Media.
3. ***Data Encoding (Chapter 5)*** **10 lectures**  
Encoding of Digital Data as Digital Signals. Amplitude, Frequency, and Phase Shift Keying. Pulse Code and Delta Modulation. Analog Modulation (Amplitude, Frequency, and Phase Modulation).

4. ***The Data Communication Interface (Chapter 6)*** **4 lectures**  
Asynchronous and Synchronous Transmission. Error Detection Techniques. Interfacing.
5. ***Data Link Control (Chapter 7)*** **7 lectures**  
Line Configuration. Flow and Error Control. Bit-Oriented Data Link Control.
6. ***Multiplexing (Chapter 8)*** **5 lectures**  
Frequency, Time, and Space Division Multiplexing.
7. ***Introduction to LAN Technology. (Chapter 13)*** **2 lectures**  
LAN Architecture. The Bus, Tree, and Ring Topologies. Medium Access Control Protocols and Standards.