King Saud University
College of Engineering
Electrical Engineering Department

EE 320: Communication Principles
Second Semester (1436/37 H)

Instructor Contract Information:
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Course Pre-requisite: EE 301-Signals and systems

Textbook:
Simon Haykin and Michael Moher, *An introduction to Analog and Digital Communication*, John Wiley, 2nd edition, 2007.

References:
1) B.P Lathi, *Modern Digital and Analog Communication Systems*, Oxford University Press, New York, 3rd edition, 1998.
2) John G Proakis and Masoud Salehi, *Fundamentals of Communication systems*, Pearson Education, 2007.

Course Outline:

Ch # (Textbook)	Topics	Week #
1	**Introduction:** Historical Notes, Elements of Communication systems, Applications, Primary Communication Resources. System Design Parameters.	1
2	**Fourier Representation of Signals and Systems:** Continues-Time Fourier Transform (CTFT), CTFT properties, Dirac Delta Function, Unit Step function, Fourier Series, Signal Bandwidth (BW), LTI system response, Frequency Response, Correlation, Energy Spectral density, Power Spectral Density.	2,3
3	**Amplitude Modulation:** Amplitude Modulation (AM), Generation (Switching Modulator), Detection (Envelop Detector), Double Sideband-Suppressed Carrier (DSB-SC) Modulation, Generation (Product Modulator), Detection (Coherent Detector), Costas Receiver, Quadrature-Carrier Multiplexing, Single- Sideband (SSB) Modulation, Generation (Frequency and Phase Discrimination Methods), Vestigial Sideband (VSB) Modulation, VSB-Shaping Filter, Superheterodyne Receiver, Frequency-Division Multiplexing (FDM).	4,5,6,7
4	**Angle Modulation:** Phase Modulation (PM), Frequency Modulation (FM), Properties of Angle-Modulated waves, Relationship between PM and FM waves, Narrow-Band FM, Wide-Band FM, BW of FM, Generation and Detection of FM, FM Stereo Multiplexing.	8,9,10
5	**Sampling and Pulse Modulation:** Sampling Process, Analog Pulse Modulation (Pulse-Amplitude Modulation, Pulse-Width Modulation, Pulse- Position Modulation), Quantization Process, Digital Pulse Modulation (Pulse- Code Modulation, Delta Modulation, Differential Pulse-Code Modulation), Line Codes, Time-Division Multiplexing (TDM).	11,12,13
7	**Introduction to Digital Band-Pass Modulation Techniques:** Binary Amplitude-Shift Keying (BASK), Binary Phase-Shift Keying (BPSK), Quadriphase-Shift Keying (QPSK), Binary Frequency-Shift Keying (BFSK).	14,15

Grading Policy:
  20% Homework's/Quizzes/Tutorial/Attendance
  20% Mid-term Exam-I (Tue., 28/05/1437H 8/03/2016)
  20% Mid-term Exam-II (Tue., 12/07/1437H 19/04/2016)
  40% Final Exam

Course Policy:
  - Students are expected to attend all classes and participate in all in-class discussions.
  - Students are responsible to follow all instructions, either oral or in writing, that are provided in the class.
  - Homework is always submitted on time.
  - Cheating on homework or in exam is NOT tolerated in any way.