

EE3050: Analog and Digital Communication Systems

Course Overview

Course Information

- Class timings and venue
 - Mon 11 am - 12 pm, Tue 12 pm - 1 pm, Thu 9 - 10 am, Fri 10 - 11 am (slot C)
 - Room 306, Transit campus
- Moodle page
 - All announcements, handouts, and practice questions will be posted there
- Textbook: *Modern Digital and Analog Communication Systems*, B. P. Lathi and Zhi Ding
- References:
 - *Introduction to Analog and Digital Communications*, Simon Haykin and Michael Moher
 - *Communication Systems*, Simon Haykin
 - *Digital Communications*, John G Proakis and Masoud Salehi

Course Evaluation

- End-semester exam – 40 %
- Test 1 – 20%
- Test 2 – 20%
- Quizzes – 20%

- Practice questions will be posted after each topic/chapter
 - Can have a tutorial session outside the class hours
 - Followed by a quiz

Course Content

Signals and Systems Review



- LTI systems, convolution
- Transforms - Fourier and Hilbert
- Autocorrelation, PSD

Modulation Theory



Analog modulation



- Amplitude modulation: AM, SSB, VSB, QAM
- Angle modulation: FM, PM
- PLL, Super-heterodyning

Digital modulation



- Sampling and quantization
- PCM, Delta modulation, Line coding, and Pulse shaping
- Digital carrier modulation - PAM, ASK, FSK, PSK, QPSK

Signal Detection, Noise, and Performance Analysis



- System performance - Bandwidth, SNR, Data rate, Probability of error
- System impairments

General Comments

- Objective: Provide basic technical knowledge for designing future communication systems
 - Expect a bit of mathematics!
- Approach is to study the major functional blocks that are common to practically all communication systems
 - Not specific to any communication system