

The semester summary

The summaries at the end of each chapter.

Course outcomes from the class syllabus- below:

### **Course Outcomes**

Calculate and use Fourier Series and Transforms, Energy Spectral Density and Power Spectral Density of signals.

Explain the basics of line-coding and baseband digital transmission.

Calculate the required bandwidth for baseband digital signals.

Explain the basics of analog modulation, DSB-SC, DSB-LC, SSB, VSB, FM and PM.

Compare analog modulation in terms of bandwidth and power efficiency/requirements.

Explain the operation of a superheterodyne receiver.

Use TDM, FDM, TDMA, FDMA, TDD, FDD to combine signals and calculate required bandwidth.

Explain the basics of digital modulation, ASK, FSK, PSK, QPSK, MPSK, and M-QAM, OFDM

Compare digital modulation techniques in terms of bandwidth requirements and energy/bit.

Calculate signal-to-noise ratios and perform system trade-offs using link budgets.

Compare the noise performance of DSB-SC, DSB-LC, SSB, and FM.

Understand the system trade-offs for analog modulation techniques.

Calculate bit error rate for BPSK, QPSK, MPSK M-QAM.

Explain system trade-offs for digital modulation techniques.

Explain the operation of OFDM/LTE systems, calculate bit rates, role of CP, and AMC.