

W	SUBJECT	SECTION	HW	LABORATORY
1	Introduction: Communication Systems, Signal Classifications and Operations, Unit Impulse Function, Review of Trigonometric and Exponential Fourier Series.	1, 2.1 – 2.4, 2.8 - 2.9	2.3-1, 2.4-1(e), 2.8-4(d), 2.9-1(b), 2.9-2	<b>No Lab</b>
2	Review of Fourier Transform, Properties of FT, Convolution, Linear Time-invariant Systems, Ideal and Practical Filters (LPF and BPF)	3.1 – 3.5	3.1-4(b), 3.1-7(a), 3.3-6(a),(b),3.4-1	Review Session: Fourier Series & Transform
3	Baseband and Carrier Communication, Amplitude Modulation (AM), Double Sideband Suppressed Carrier (DSBSC)	4.1 – 4.3	4.2-1, 4.2-4, 4.2-9, 4.3-1, 4.3-2	Exp. # 1 – Part a: Fourier Series (Matlab)
4	Quadrature Amplitude Modulation (QAM), Hilbert Transform, Single Sideband Modulation (SSB)	4.4 – 4.5	4.4-1, 4.5-1, 4.5-2, 4.5-5	Exp. # 1 – Part b: Fourier Transform (Matlab)
5	Vestigial Sideband (VSB) Modulation, Carrier Acquisition, Superheterodyne AM Receiver	4.6 – 4.8	4.6-1, 4.8-1, 4.8-2	Exp. # 2: Analog Communication Board (ACB)
6	Angle Modulation: Instantaneous Frequency, Frequency Modulation (FM) and Phase Modulation (PM). Bandwidth of Angle Modulated waves	5.1 – 5.2	5.1-1, 5.1-2, 5.1-3, 5.2-1, 5.2-2	Exp. # 3: AM (Matlab)

**Major Exam I, Wednesday, March 23<sup>rd</sup>, 6:30-8:30pm, Location: To be decided**

7	Wide-band FM, Generation of FM Waves	5.2 cont. – 5.3	5.2-4, 5.2-5, 5.2-6, 5.3-1, 5.4-2	Exp. # 4: DSB-SC & AM (ACB)
8	Demodulation of FM, Phase-Locked Loop (PLL), FM Receiver, Stereo FM	5.4, 5.6		Exp. # 5: FM (Matlab)
9	Sampling Theorem, Signal Reconstruction	6.1	6.1-1, 6.1-2(a), (b), (c), 6.1-3, 6.1-4, 6.1-5	Exp. # 6: FM (ACB)
10	Digital Modulation, Pulse Code Modulation (PCM), Uniform and Non-uniform Quantization	6.2.1, 6.2.2	6.2-1, 6.2-2, 6.2-3	<b>No Lab</b>
11	T1 Carrier System, Differential Pulse Code Modulation, Delta Modulation	6.2.4 – 6.4	6.2-5, 6.2-6, 6.2-8	Exp. # 7: Sampling & Quantization (Matlab)

**Major Exam II, Wednesday, May 4<sup>th</sup>, 7:00-9:00 pm, Location: To be decided**

12	Digital Communication systems, Line Coding	7.1-7.2	7.2-1, 7.2.2, 7.2.3	Exp. # 8: PAM (DCB)
13	ISI and Pulse Shaping	7.3	To be decided	Exp. # 9: PCM and TDM (DCB)
14	M-ary Communication, Digital Carrier Systems	7.7-7.8, 7.9	7.7-3, 7.8-1, 7.9-2	Exp. # 10: Channel Effects (DCB)
15	Topics in communication technologies, Review	Selected topics		Lab Exam

**GRADING POLICY:**

CLASS WORK: 20% LABORATORY: 20% EXAM I: 15% EXAM II: 15% FINAL EXAM: 30%

**TEXT BOOK:**

Lathi, B., *Modern Digital & Analog Communication Systems*, 3<sup>rd</sup> Ed., 1998

**REFERENCES:**

Martin R., *Analog and Digital Communication Systems*,  
 Couch, L., *Digital and Analog Communication Systems*.  
 Haykin, S., *Communication Systems*.

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