





<ul style="list-style-type: none"> ▶ Pre-course Materials ▶ Topic 1: Course Overview ▶ Topic 2: Lossless Source Coding: Hamming Codes ▶ Topic 3: The Frequency Domain ▶ Topic 4: Lossy Source Coding ▶ Topic 5: Filters and the Frequency Response ▶ Topic 6: The Discrete Fourier Transform ▶ Topic 7: Signal Transmission - Modulation ▼ Topic 8: Signal Transmission - Demodulation 	<h2>LAB 4 - OVERALL OBJECTIVES</h2> <p>In this lab, we will learn how to implement the Frequency Division Multiplexing (FDM) communication scheme. FDM is one of the common ways to share channels in order to achieve simultaneous transmission of different signals by different users. It assigns to each user a frequency band within the communication channel's spectrum for communication. The width and allocation of the frequency bands are designed so that they don't overlap and thus, signals from different users will not interfere one another. In this lab, we will implement FDM by amplitude modulation, in which the amplitude of a cosinusoidal carrier is changed by the message. At the receiver side, the original message is recovered by demodulation, where the received signal is multiplied by a cosine with the same frequency as used by the modulator, and then low pass filtered. In this lab, we will complete 3 tasks.</p> <ol style="list-style-type: none"> 1. In task 1, we will learn how to modulate a carrier wave by the message we wish to send. 2. In task 2, we will learn how to demodulate the received signal to recover the original message. 3. In task 3, we will learn how to multiplex a communication channel by allocating different frequency ranges to different messages. <hr/>
8.1 Demodulation	


8.2 Analysis of Mixing using Cosines

Week 4 Quiz due Nov 23, 2015 at 15:30 UTC 


8.3 Analysis of Mixing using Complex Exponentials

Week 4 Quiz due Nov 23, 2015 at 15:30 UTC 


8.4 Filtering

Week 4 Quiz due Nov 23, 2015 at 15:30 UTC 

8.5 Non-ideal Effects

Week 4 Quiz due Nov 23, 2015 at 15:30 UTC 

8.6 Lab 4 - Modulation

Lab due Nov 23, 2015 at 15:30 UTC 

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