Introduction: This lab continues lab 2a) focusing on using linear modulation systems to multiplex signals.

Prelab) Perform this before you come to lab on Tuesday. Finish lab 2a).

1) Consider transmitting two baseband signals of the same bandwidth, $B_m$. Both these signals are modulated to fit in the frequency band between $f_0 - B_m$ to $f_0 + B_m$ where $f_0 >> B_m$. Discuss and implement two methods that can accomplish this task. Plot message signals and transmitted signals in time and frequency domain. Use a synchronous receiver for each method to recover the two message signals. Plot received signals. Discuss results. (Hint: SSB-SC AM, QAM).

2) Consider transmitting five baseband signals all of bandwidth 10Hz. The five signals are modulated and multiplexed to a transmitted signal that has nonzero frequency bands ranging from 60 to 120Hz. Design a transmitter that can accomplish this with the following constraints; QAM must be used for at least two signals, SSB-SC should be used for at least one signal, and there should be guard bands if possible. Plot message signals and transmitted signals. Design an appropriate receiver and plot the received signals. Discuss your results.

Note Lab 2 report will include results and discussion from Lab 2a) and Lab 2b). This will be the first assignment where regular grading will be used.