Course: Communication Systems
ECSE 4520 - Section 01
Fall Semester 2005

Electrical, Computer and Systems Engineering Department
Rensselaer Polytechnic Institute

Homework 5 - Due Tuesday, December 6, by the end of lecture.

Matlab Problem:
The message signal is defined as

$$m(t) = \begin{cases} 1 & , 0 \leq t < .05 \\ -2 & , .05 \leq t < .1 \\ 0 & , \text{otherwise} \end{cases}$$

This message DSB-SC AM modulates the carrier $c(t) = \cos(2\pi \cdot 250 \cdot t)$. We call the modulated signal $u(t)$.

1. Obtain the expression for $u(t)$.
2. Derive the spectra of $m(t)$ and $u(t)$.
3. IN MATLAB (no points for doing it by hand) demodulate $u(t)$ and recover $m(t)$. Plot the results in time AND frequency domain.

Homework may be handed in early by slipping it under my door or putting it in my mailbox. Late homework shall NOT be graded.

Remember, working in groups is strongly encouraged, however, you must hand in *your own work.*