GEORGIA INSTITUTE OF TECHNOLOGY
SCHOOL of ELECTRICAL and COMPUTER ENGINEERING

ECE 2025 Spring 2004
Problem Set #11

Assigned: 3-Apr-04
Due Date: Week of 12-Apr-04

The Monday and Tuesday Recitation sections can turn in this homework assignment during their Lab times on 14-April (Wed) and 15-April (Thurs).

Quiz #3 will be given on 9-April. One page ($8\frac{1}{2} \times 11''$) of **handwritten** notes allowed.

Reading: In *SP First*, Chapter 11: *Continuous-Time Fourier Transform*
Chapter 12: *Filtering, Modulation and Sampling,* (applications of the Fourier Transform).

$\Longrightarrow$ **Please check the "Bulletin Board" often. All official course announcements are posted there.**

ALL of the **STARRED** problems will have to be turned in for grading. A solution will be posted to the web. Some problems have solutions similar to those found on the CD-ROM.

PROBLEM 11.1*:

Signal Processing First, Chapter **12**, Problem **3**, page 381.
Make sure that you show how the Fourier transforms are combined together.

PROBLEM 11.2*:

Signal Processing First, Chapter **12**, Problem **6**, page 382. Parts (a) and (b) only.

PROBLEM 11.3*:

Signal Processing First, Chapter **12**, Problem **7**, page 382–383. Parts (a), (b) and (c).
Note: There is a typo in the formula for $w(t)$ in part (c)

$$w(t) = \tfrac{1}{2}x_1(t)[1 + \cos(2\omega_c t)] + \tfrac{1}{2}x_2(t)\sin(2\omega_c t)$$

PROBLEM 11.4*:

Signal Processing First, Chapter **12**, Problem **7**, page 382–383. Parts (d) and (e)

PROBLEM 11.5*:

Signal Processing First, Chapter **12**, Problem **8**, page 383–384.

Notice that several of these problems will be helpful in completing Lab #11 on AM Communication.