EE 4383/5371, FALL 2001 HOMEWORK/Proj. #7

ASSIGNED: 10/25/01 (Thursday)
DUE: **PART A: October 30, 2001 (Tuesday) by 4:30 PM** in my office (Eng. 339A)
PART B: Nov. 2, 2001 (Friday) by 2:30 PM in my office or Marty's (Eng. 339A or B)

OFFICE HRS: Mon.,Tue.,Thur.: 1:30 – 2:30
Wed 1:30 – 2:30 (new but tentative, check outside my door for changes)
Friday 11:00 – 12:00 noon

Handouts and other information can be downloaded and printed from:
http://www.ece.utep.edu/test/faculty/sergio_cabrera/ee4383.htm

>>> **ANNOUNCEMENT: Exam 2** is tentatively scheduled for **TUESDAY NOVEMBER 13, 2001**

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TO-DO FOR THIS HOMEWORK:

A. More FIR, MATLAB ASSIGNMENTS (FIR, sampling, etc.):

Reading: Review O-S Chap. 3, read **Sect. 8.2.4-8.2.7** in our textbook.
Relevant background (see excercises below) in the Matlab book by McClellan et. al.

From our textbook:

1. **BOTH:** From the textbook **8.9**
2. **BOTH: Ex. 1.2 page 30 .** Note the "chirp" command exists in two versions with similar names (*chirp* vs. *lchirp* ?) make sure you check its usage (use HELP) format before proceeding.
3. **BOTH:** Design four FIR filters using the equiripple Parks-McClellan (*remez*) method and illustrate their impulse responses and all frequency responses:
   a) **Length 16, 32 differentiator**
   b) **Length 12, 28 Hilbert transformer**

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B. Analog and IIR Filter Design: Same for both classes

Reading: **8.3 Intro., 8.3.3, 8.3.5**(Butterworth filters only for now), **8.3.6**
Problems:

8.15 (Use the Matlab filter design tool): For the Butterworth case, find a way to produce the coefficients of the transfer function H(s) and poles for the associated analog filter that results in the desired H(z) using T=2 in (8.3.40). Note, this is NOT the equivalent $H_{eff}(\Omega)$.

8.16 a); design this one 100% by hand, not Matlab used.

8.21 a), c) (Use T=0.3, α=0.1)

8.19 (LONG) Use Matlab to design Elliptic filters