ELEN 458/622 (ESS) **Due: November 12, 2009**
Fall '09

HOMEWORK ASSIGNMENT #5

1. (For 622) Design a BP filter using transconductance -mode building blocks. The filter is a 4^{th} order filter composed of equal second order BP with the following specifications H(jwo)=1.4142, fo=1.1GHz, BW=65MHz, Vdd=-Vss=1.65V and 0.35um CMOS technology.
2. (For 458) Same as above but do not design at the transistor level, use OTA macro-model and identify the values of the Gm and excess phase for the OTA requirements

3. Using a second-order or fourth order BP of previous problem, design an oscillator for fo= 1.1GHz. Describe the design procedure and the comparator used, search for current comparators in the literature. For 622 include transistor level design, for 458 only macromodel level with non-idealities.
4. Design a 5-th Order Active RC Inverse Chebyshev for 19.7 MHZ at the transistor (system for 458) level meeting the draft IEEE 802.11n. Use 0.13um technology. DC gain of 2db. Vdd = 1.8v.Compare your results with the previously reported filter in JSCC, Nov 2007.