ECE 580
NETWORK THEORY
Fall 2023

LECTURES: MW 10:00-11:50 am, in 207 Bexell Hall.
https://oregonstate.zoom.us/j/95280517759?pwd=eGtUdDhmWVRoTTBZOTIEVkJZPeHk3QT09

INSTRUCTOR: Gabor C. Temes, Professor
temes@eecs.oregonstate.edu

OFFICE HOUR: MW 1:30-3:00 pm

PREREQUISITE: Graduate standing in ECE

Website: https://classes.engr.oregonstate.edu/eecs/fall2023/ece580

TA: Manxin Li <liman@oregonstate.edu>

TA Office Hours: TR 1:00-2:00 pm, via class zoom link

TEXT: Lecture notes will be posted on the Web. Parts of the following books will be used:

(Note: It is not necessary to acquire these books. Most are out of print. Lecture notes will be posted on the class website.)

MATERIAL TO BE COVERED (if time permits):
• Network classification: linear/nonlinear, time-varying/invariant, active/passive, lossy/lossless, reciprocal/nonreciprocal, lumped/distributed, dynamic/memoryless, sampled-data/continuous-time networks. Definitions useful in all discussions involving circuits.
• Networks components: R, L, C elements; ideal/perfect/real transformers; op-amps; gyrators; independent/dependent sources. Definitions useful in all discussions involving circuits.
• Network analysis: the incidence matrix; branch relations; nodal analysis; two-port parameters; multiport networks; multiport parameters; scattering relations and parameters; transfer functions; sensitivity analysis. The basis of computer-aided and paper-and-pencil circuit analysis of passive, active R-C, Gm-C and switched-capacitor filters.
• Network synthesis: approximation theory for continuous-time and sampled-data filters; the design of passive, active R-C, Gm-C and switched-capacitor filters. The basics of active, passive and sampled-data analog filters.

MIDTERM EXAMINATION: Wednesday, Oct. 18, 10:00 - 11:50 am.

FINAL EXAMINATION: Thursday, Dec. 14, 6:00 – 7:50 pm.