ECE580: Network Theory

Topics Covered:

- Network classification: linear/nonlinear, time-varying/invariant, active/passive, lossy/lossless, reciprocal/nonreciprocal, lumped/distributed, dynamic/memoryless, sampled-data/continuous-time networks.
- Networks components: R, L, C elements; ideal/perfect/real transformers; op-amps; gyrators; independent/dependent sources.
- Network analysis: the incidence matrix; branch relations; nodal analysis; two-port parameter; multiport networks; multiport parameters; scattering relations and parameters; transfer functions; sensitivity analysis.
- Network synthesis: approximation theory for continuous-time and sampled-data filters; the design of passive, active R-C, Gm-C and switched-capacitor filters.

Classroom	KEAR 212
Class time	M/W 5:00-6:50pm
Instructor:	Tejasvi Anand, `anandt@eecs.oregonstate.edu`
Instructor Office:	KEC 4113, Ph: 541-737-4673
Instructor Office hours:	Friday 4:00-5:00pm (or by appointment)
Textbook:	No text book required
TAs:	Ashwin Ramachandran `ramachaa@oregonstate.edu`, and Jian Kang `kangjia@oregonstate.edu`
TA Office hours:	M/W 2:00-3:00pm
Course website:	`https://web.engr.oregonstate.edu/~anandt/ECE580_Fall_2016`

Grading:

Homework	20%
Midterm	35%
Finals	40%
In-class participation	5%

Reference books:

- Electrical Network Theory, N. Balabanian and T. Bickart, Krieger Publishing Co., 1983: Chapters 1-3 & 8
- Introduction to Circuit Synthesis and Design, G. Temes and J. Lapatra, McGraw-Hill, 1977: Chapters 7-9 & 12
- Electrical Networks, J. Choma, Krieger Publishing Co., 1991: Chpaters III & IX

Class Notes: To be posted online.

Exams:

- Midterm Exam: Oct 31, KEAR 212, 5:00-6:50pm
- Final Exam: Dec 5, (Place and Time TBD)