Master of Engineering in Electrical Engineering

Prescribed Core Courses (9 credits)

Title	Description	Credits
Linear Systems: Time Domain and Transform Analysis	Signals and systems representations, classifications, and analysis using; difference and differential equations, Laplace transform, z-transform, Fourier series, FT, FFT, DFT.	3 credits
Probability, Random Variables, and Stochastic Processes	Review of probability theory and random variables; mathematical description of random signals; linear system response; Wiener, Kalman, and other filtering.	3 credits
Research Projects	Supervision of individual research projects leading to MS or MEng papers. Written and oral reports are required.	3 credits

Electives (21 credits)

Title	Description	Credits
Communication Systems II	Probability fundamentals, digital/analog modulation/demodulation, systems noise analysis, SNR and BER calculations, optimal receiver design concepts, introductory information theory.	3 credits
Power Systems Analysis I	Fundamentals, power transformers, transmission lines, power flow, fault calculations, power system controls.	3 credits
Engineering Electromagnetics	Electromagnetic field theory fundamentals with application to transmission lines, waveguides, cavities, antennas, radar, and radio propagation.	3 credits
Topics in Digital Signal Processing	Parametric modeling, spectral estimation, efficient transforms and convolution algorithms, multirate processing, and selected applications involving non-linear and time-variant filters.	3 credits
Linear Control Systems	Continuous and discrete-time linear control systems; state variable models; analytical design for deterministic and random inputs; time-varying systems and stability.	3 credits
Optimal Control	Variational methods in control system design; classical calculus of variations, dynamic programming, maximum principle; optimal digital control systems; state estimation.	3 credits
Power System Control and Operation	Steady-state and dynamic model of synchronous machines, excitation systems, unit commitment, control of generation, optimal power flow.	3 credits