THE OHIO STATE UNIVERSITY
COLLEGE OF ENGINEERING

Signals and Systems

ECE 3050

Credit Hours:
3.00

Course Levels:
Undergraduate (1000-5000 level)

Course Components:
Lecture

Course Description:
Linear systems and models in continuous and discrete time; convolution; Fourier series and transform; frequency response; Laplace transform; z-transform; applications.

Prerequisites and Co-requisites:
Prereq: Prereq: 2020, 2050, and 2060; or 2100; and Math 2568; and enrollment in ECE or EngPhysics major

Course Goals / Objectives:
- Be competent with linear systems as approximate models of physical systems
- Master convolution for discrete-time and continuous-time linear systems
- Master Fourier series, Fourier transform, and discrete-time Fourier transform
- Master frequency response concepts
- Master using Laplace transform techniques for solving linear differential equations
- Be competent in the use of Z-transform techniques for solving linear difference equations
- Be exposed to the applications of signal and systems concepts.
- Be competent using Matlab for visualization of signals and solutions of linear systems.

Course Topics:
- Modeling signals and systems
- LTI properties in time domain; stability
- Convolution: computation in discrete and continuous time
- Fourier series
- Fourier transforms
- Discrete-time Fourier transform
- Frequency response, Bode plots, and filters
- Sampling
- Laplace transform; solving ODEs; stability
- Z-transform
- Applications (e.g., system identification,
- Reviews

Designation:
Required
Elective