University of Wisconsin - Madison
College of Engineering [EGR]
Last Offered: 2013-2014 Spring [1144]

Direct Link to this Syllabus:

1. ECE 321, Transmission Lines for Digital Applications
2. Credits: 1  Contact Hours: 2.5
3. Textbook and Materials:


a. Other Supplemental Materials: None

   • Specific Course Information:

   a. Brief description of the content of the course (Course Catalog Description):
      Transmission line equations, transmission line analysis for pulse waveforms, lossless and lossy lines, dielectric properties of common on-chip and off-chip media, reflection diagrams, line termination, line simulation, serial and parallel lines, coupled lines and crosstalk.

   b. Pre-requisites or Co-requisites: ECE 220. Stdts may not receive credit for both ECE 320 & 321

   c. EE-N/A
      CMPE-Required

   • Specific Goals for the Course:

   a. Course Outcomes:

      1. Ability to draw the bounce diagram
      2. Ability to simulate a TL using SGFramework
• ABET Student Learning Outcomes:
  
  (a) Ability to apply mathematics, science and engineering principles.
  (k) Ability to use the techniques, skills and modern engineering tools necessary for engineering practice.

• Brief List of Topics to be Covered:
  1. Lumped and Distributed Circuits; Role of Wavelength; Maxwell's Equations
  2. Transmission Line Equations; Circuit Models
  3. Waves on Transmission Lines
  4. Simulation of Transmission Lines
  5. Reflections at Discontinuities
  6. Bounce Diagrams
  7. Transient Response of Lines with Resistive Termination
  8. Capacitive and Inductive Termination
  9. Nonlinear Terminations
  10. Serial and Parallel Lines
  11. Coupled Lines and Crosstalk
  12. Transmission Line Parameters