

- Course Number and Title: ME 328. Engineering Analysis II
- Catalog Description: Advanced engineering analysis with emphasis on engineering applications. Topics include systems of ordinary differential equations, Fourier analysis, partial differential equations, and functions of complex variable with focus on analytical methods.
- Credit Hours: 3 Credits (3)
- Prerequisite(s) / Corequisite(s): Prerequisite(s): M E 228
Corequisite(s): None
- Required: Required for BSME and BSAE Degrees
- Course Availability: Fall and Spring Semesters (+ Summer)
- Instructor (Usual): Dr. Banavara Shashikanth (See <https://mae.nmsu.edu/people/faculty.html>)
- Textbook: Kreyszig, E., *Advanced Engineering Mathematics*, 10th Ed., John Wiley & Sons, Inc., 2011 (<https://www.vitalsource.com/referral?term=9780470913611>)
- Course Learning Objectives: After completing this course, a student should be able to:
 - 1) Use basic properties of Laplace Transforms and apply to initial value problems.
 - 2) Understand basics of phase space analysis for ODEs.
 - 3) Obtain Fourier Series representations of functions.
 - 4) Apply the separation of variables method to solve linear homogeneous PDEs.
 - 5) Perform basic operations involving complex numbers.
- Topics Covered:
 - Laplace Transform: Definition, properties and applications to initial value problems.
 - Phase space, equilibrium points and linear stability analysis of systems of 1st order ODE
 - Fourier Series, Fourier Integrals, Fourier Cosine and Sine Transforms
 - Linear, homogeneous PDEs—1D Heat, 1D Wave and 2D Laplace equations, boundary conditions and initial conditions, solutions by separation of variables method.
 - Introduction to complex numbers and basic operations