- **Course Number and Title:** M E 261. Numerical Methods (Previously, ME Problem Solving)
- **Catalog Description:** Introduction to programming syntax, logic, and structure. Numerical techniques for root finding, solution of linear and nonlinear systems of equations, integration, differentiation, and solution of ordinary differential equations will be covered. Multi function computer algorithms will be developed to solve engineering problems.
- **Credit Hours:** 3 Credits (2+3P)
- **Prerequisite(s) / Corequisite(s)** Prerequisite(s): ENGR 190 or MATH 1521G or MATH 1521H
  Corequisite(s): None
- **Required:** Required for BSME and BSAE Degrees
- **Course Availability:** Fall and Spring Semesters (+ Summer)
- **Instructor (Usual):** Dr. Yanxing Wang (See https://mae.nmsu.edu/people/faculty.html)
- **Textbook:** Textbook: Not Required
  References: Chapra, S.C., *Applied Numerical Methods with MATLAB for Engineers and Scientists*, 5th Ed., McGraw Hill, 2023, ISBN-10: 126416260X or ISBN-13: 9781264162604.
- **Course Learning Objectives:** After completing this course, a student should be able to:
  1) Use a variety of numerical methods in both basic and advanced engineering calculations.
  2) Formulate algorithms and write programs to solve engineering problems.
  3) Develop an appreciation for the hazards and limitations of numerical solutions, including accuracy, stability, and computer limitations of memory and speed.
- **Topics Covered:**
  - MATLAB program environment and MATLAB functions
  - Roots of equations
  - Linear systems of equations
  - Nonlinear systems of equations
  - Interpolation and curve fitting
  - Numerical differentiation and integration
  - Solution of ordinary differential equations