M E-MECHANICAL ENGINEERING (M E)

M E 228. Engineering Analysis I
3 Credits (3)
Introduction to engineering analysis with emphasis on engineering applications. Topics include ordinary differential equations, linear algebra, and vector calculus with focus on analytical methods. May be repeated up to 3 credits.
Prerequisite: C- or better grades in MATH 2530G.
Learning Outcomes
1. An ability to derive differential equation models of phenomena relevant to mechanical and aerospace engineering.
2. An ability to use basic methods for solution of these ordinary and partial differential equations.
3. An ability to apply the solutions to simple analysis and design situations.

M E 234. Mechanics-Dynamics
3 Credits (3)
Kinematics and dynamic behavior of solid bodies utilizing vector methods. May be repeated up to 3 credits.
Prerequisite: A grade of C- or better grade in the following: C E 233 and PHYS 1310G and MATH 1521G or MATH 1521H.
Learning Outcomes
1. Student will be able to apply concepts of kinematics and accelerated motion.

M E 240. Thermodynamics
3 Credits (3)
First and second laws of thermodynamics, irreversibility and availability, applications to pure substances and ideal gases.
Prerequisite: C- or better grades in PHYS 1310G.
Learning Outcomes
1. An ability to apply the first law of thermodynamics to energy systems.
2. Understanding and application of thermodynamic concepts and properties to analyze systems with pure substances and ideal gases.

M E 261. Numerical Methods
3 Credits (2+3P)
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. May be repeated up to 3 credits.
Prerequisite: C- or better grades in MATH 1521G or MATH 1521H or ENGR 190.
Learning Outcomes
1. Ability to use a variety of numerical methods in both basic and advanced engineering calculations.
2. Ability to formulate algorithms and write programs to solve engineering problems.
3. Ability to develop an appreciation for the hazards and limitations of numerical solutions, including accuracy, stability, and computer limitations of memory and speed.