

# M E-MECHANICAL ENGINEERING (M E)

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## M E 159. Graphical Communication and Design 2 Credits (1+3P)

Sketching and orthographic projection. Covers detail and assembly working drawings, dimensioning, tolerance specification, and design projects.

**Prerequisite(s)/Corequisite(s):** MATH 1250G.

## M E 210. Electronics and System Engineering 3 Credits (2+3P)

Introduction to microcontrollers, measurement systems, motion actuators, sensors, electric circuits, and electronic devices and interfacing. Students required to work individually and in teams to design and test simple electromechanical systems. Restricted to Las Cruces campus only. May be repeated up to 3 credits.

**Prerequisite:** C- or better grade in MATH 1521G or MATH 1521H or ENGR 190.

### Learning Outcomes

1. Ability to apply knowledge of mathematics, science, and engineering; Ability to design and conduct experiments, as well as to analyze and interpret data; Ability to design a system, component or process to meet desired needs within realistic constraints; Ability to identify, formulate, and solve engineering problems; Ability to use the techniques, skills and modern tools necessary for engineering practice.

## M E 222. Introduction to Product Development 3 Credits (2+3P)

Introduction to modern methods used in the realization of products. Traditional manufacturing processes, such as metal stamping, turning, milling, and casting are reviewed. Modern methods of rapid prototyping and model making are discussed in context of computer-aided design. Techniques for joining metals, plastics, and composites are discussed. Role of quality control is introduced. May be repeated up to 3 credits.

**Prerequisite:** C- or better grades in M E 159 or E T 110.

### Learning Outcomes

1. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.

## 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 identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.

## M E 234. Mechanics-Dynamics 3 Credits (3)

Kinematics and dynamic behavior of solid bodies utilizing vector methods.

**Prerequisite(s)/Corequisite(s):** MATH 2530G. Prerequisite(s): C E 233.

## M E 236. Engineering Mechanics I 3 Credits (3)

Force systems, resultants, equilibrium, distributed forces, area moments, friction, and kinematics of particles. May be repeated up to 3 credits.

**Prerequisite(s)/Corequisite(s):** PHYS 1310G. Prerequisite(s): MATH 1521G or MATH 1521H.

## M E 237. Engineering Mechanics II 3 Credits (3)

Kinetics of particles, kinematics and kinetics rigid bodies, systems of particles, energy and momentum principles, and kinetics of rigid bodies in three dimensions. May be repeated up to 3 credits.

**Prerequisite(s)/Corequisite(s):** MATH 2530G. Prerequisite(s): M E 236.

## M E 240. Thermodynamics 3 Credits (3)

First and second laws of thermodynamics, irreversibility and availability, applications to pure substances and ideal gases. May be repeated up to 3 credits.

**Prerequisite:** C- or better grades in PHYS 1310G.

### Learning Outcomes

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics

## M E 261. Mechanical Engineering Problem Solving 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 apply knowledge of mathematics, science, and engineering; Ability to identify, formulate, and solve engineering problems; Ability to use the techniques, skills and modern tools necessary for engineering practice.