

ME 3501: Dynamic Systems & Control Theory

3 Credit Hours

Prerequisite: ENGR 3125, MATH 2306 and Engineering Standing

Introduction to a unified approach to lumped-element modeling and analysis of mechanical, electrical, hydraulic, and multi-energy domain systems. Topics include: graphical and computer modeling; formulation of state-space equations; analysis of linear systems; determination of time and frequency domain response of such systems to transient and periodic inputs; block diagram representation of dynamic systems using Laplace Transform. Feedback control systems, including PID control, root locus, stability analysis, and computer modeling.

ME 3701: Manufacturing Engineering

3 Credit Hours

Prerequisite: ENGR 3131, ME 3101, and Engineering Standing

This course introduces the fundamentals and applications of major manufacturing processes and engineering along with their capabilities, analyses, selection and economics. It establishes the technical knowledge for processes such as casting, deformation, material removal and polymer processes. Modern rapid prototyping processes such as 3D printing are also covered.

ME 3705: Internal Combustion Engines

3 Credit Hours

Prerequisite: ME 3440 and Engineering Standing

This course will provide an introduction to internal combustion engines from Thermodynamics and Heat Transfer viewpoints. Students will learn the classification of internal combustion engines, engine performance parameters, gas power cycles on which the engines work on will be discussed. Various engine components and their functions will be introduced. Engine performance calculation will be taught in detail followed by the discussion on the formation of exhaust emission and various control methods to meet the emission norms.