## ME 4260: Plastic Product and Mold Design

***3 Credit Hours***

*Prerequisite: ME 3101, ENGR 3131, and ENGR 3343*

A study of the various complexities involved in design of plastic parts, and design of the dies and molds required for manufacturing of plastic parts. The course teaches design of plastic parts taking into account non-linear and time-dependent mechanical behavior of plastics, general guidelines for design of plastic parts, design of dies for polymer extrusion and design of molds for injection molding of plastic parts.

## ME 4303: Failure Analysis

***3 Credit Hours***

*Prerequisite: ME 3101 and ENGR 3131*

This course focuses on understanding the mechanisms responsible for failure of engineering materials and design for failure prevention. Topics may include procedures for conducting failure analyses, linear elastic fracture mechanics, elastic-plastic fracture mechanics, fatigue, corrosion and environmental factors, failure of metals, ceramics, polymers and composites. The course will involve examination of numerous case studies that involve the use of principles of metallurgy and failure analysis in a wide variety of real-world applications.

## ME 4304: Applied Fracture Mechanics

***3 Credit Hours***

*Prerequisite: ME 3101 and ENGR 3131*

The fundamentals of Fracture Mechanics (FM) with applications are covered in this course. Concepts include linear elastic and elastic plastic FM, stress intensity, fracture toughness, fatigue crack growth, J integral, and experimental and software-based methods. Applications such as damage tolerance and leak before burst are examined and relevant software used for evaluation.

Notes: This course may be cross-leveled with ME 6304