1. ME 3221, Fundamentals of Design & Manufacturing

2. 4 credits, 4 contact hours


5. Specific course information:
   b. Prerequisites: AEM 3031, MATS 2001, ME 2011.
   c. Required course.

6. Course outcomes (related ABET student outcomes indicated in square brackets):
   a. An ability to design and analyze mechanical components to meet specifications. [1,2,4]
   b. An ability to apply failure theories to mechanical parts. [1,2,4,7]
   c. An ability to design manufacturing processes and to specify appropriate processes for the fabrication of engineered products. [1,2,7]
   d. An ability to use material properties and to evaluate the strength of manufactured parts. [1,2,4,7]
   e. Lab experience with the basics of manufacturing processes such as injection molding, welding and the use of automated manufacturing machines. [2,6]
   f. An ability to document work in lab reports. [3]

7. Course topics:
   a. Review of deformable body mechanics (loading, stress, strain, bending).
   b. Failure theories (static, fatigue).
   c. Manufacturing processes (machining, forming, molding, welding).
   d. Quality assurance (design of experiments, statistical process control).