Department of Mechanical Engineering Technology

Course number/name:
MECH 2333 Strength of Material II

Credits/contact hours:
3 credits, 3 class hours

Instructor/coordinator:
Malek Brahimi, Assistant Professor of Mechanical Engineering Technology

Text book/title/author/year

Specific course information
Catalog description:
A continuation of MECH 1233 – Statics and Strength of Materials. Topics covered (with computer applications) are review of beam design, combined stresses, columns, working stresses, sharing and screw fasteners

Pre/Corequisites:
MECH 1233, IND 1112 / MAT 1375

Required/elective/selected elective:
Required for Mechanical Engineering Technology

Course learning objectives:
1. Ability to draw shear and moment diagram for structurally determinate beams.
2. Ability to analyze and design beams.
3. Ability to analyze a load-carrying member subjected to combined stress; determine the maximum normal stress, and the maximum shearing stress.
4. Ability to draw a complete Mohr’s circle for a state of any element.
5. Ability to compute the slenderness ratio for columns.
6. Ability to use Euler formula for the analysis and design.
7. Ability to identify the modes of failure of a bolted connection.
8. Analyze and design for bearing, tensile, and shear strength.
9. Use engineering principles in strength of materials and use MATLAB to analysis and design problems in mechanical engineering technology.
10. Communicate effectively using graphs, and appropriate design codes and standards in homework and design project.

Course addresses ABET student outcomes: 3a, 3b, 3c, 3e, 3f and PC-1

Brief list of topics to be covered:

- Shear and bending moment in beams.
- Tensile and compressive stresses due to bending. Flexure formula. Shear stresses. Beam analysis.
• Design of beams. Design process. Design of steel and timber beams.

• Deflection of beams. Curvature and bending moment. The formula method.


• Columns. Euler’s formula for pin-ended columns. Extension of Euler’s formula to columns with other end conditions. Axially loaded steel machine parts.