MOHAWK VALLEY COMMUNITY COLLEGE
UTICA AND ROME, NEW YORK

CENTER FOR SCIENCE, TECHNOLOGY, ENGINEERING AND MATHEMATICS

COURSE OUTLINE

STRENGTH OF MATERIALS: MECHANICAL

MT 230

REVISED BY J. BIRT: ADDED ABET REFERENCES; ADDED REVISION TABLE 3/2015
REVISED BY B. FULLER: EDITED FORMAT 4/2015
REVIEWED AND FOUND ACCEPTABLE BY J. BIRT 8/2016
REVISED BY J. BIRT: MODIFIED FOOTER; MOVED REVISION TABLE TO NEW COVER PAGE 4/2017
REVIEWED AND FOUND ACCEPTABLE BY J. BIRT 8/2017
REVISED BY J. BIRT: MODIFIED FOOTER 7/2018
REVISED BY J. BIRT: MODIFIED FOOTER 8/2019
REVISED BY J. BIRT: MODIFIED FOOTER 8/2020
REVISED BY J. BIRT: FIXED TYPOS, MODIFIED FOOTER, ADDED "Internet audio, video, and web communication capabilities", CHANGED "complex" TO "fundamental", CHANGED "approach" TO "set up", UPDATED ETC-ABET REFERENCES 8/2021

I. Catalog Description

MT230 Strength of Materials – Mechanical C 3, P 2, CR 4

The course introduces the fundamentals of strength of materials. Topics in stress analysis are included. Laboratory activities focus on testing procedures, reporting, and computer analysis. Prerequisites: MT126 Statics: Mechanical, CT121 Statics: Civil, or ES271 Engineering Statics.

II. Student Learning Outcomes

Upon successful completion of the course, the studentwill be able to:

1. ...set up, begin, execute, and solve basic non-calculus strength of materials problems (1)
2. ... look up key materials characteristics and values (3)
3. ... execute tensile testing, display and analyze the data, and interpret the results (4)
4. …calculate shape properties of cross-sections and centers of gravity (1)
5. …solve strength of materials design problems that require the selection of inexact solutions (2)
6. …combine concepts and skills to solve fundamental mechanical strength problems (1)

() – References ETAC of ABET Program Outcome

III. Major Course Topics

Basic Material Considerations
- Stress, strain
- Stress & strain interrelationships
- Axial, direct, tension, compression, shear, torsion.
- Material properties

Complex Considerations
- Thermal deformation
- Stress concentrations
- Combined stresses

Beams
- Shear Force and Bending Moment Diagrams
- Beam Analysis, Deflection
- Beam Design based on stress considerations.

Other Structural Elements
- Columns
- Connections
- Pressure Vessels

IV. Materials

Required:

- *Applied Strength of Materials,*
  Robert L. Mott, 5th edition (available in the bookstore or online)
  ISBN 978-0-13-236849-0 (Pearson) or 9781498725910 (CRC Press)
- Stand-alone scientific calculator (not a multi-use device)
- 6" calipers, accurate to 0.001" (required for the lab, but useful in other courses)
- Internet audio and video communication capabilities