ROCHESTER COMMUNITY AND TECHNICAL COLLEGE
COMMON COURSE OUTLINE

Course discipline/number/title: ENGR 2221: Deformable Body Mechanics

A.   CATALOG DESCRIPTION
   1. Credits: 3
   2. Hours/Week: 3 Lecture
   3. Prerequisites (Course discipline/number): ENGR 2211, MATH 2238
   4. Other requirements: None
   5. MnTC Goals (if any): NA

B.   COURSE DESCRIPTION: This course is concerned with the deformation of materials under stress, including the study and analysis of simple stress and strain, shear and bending moment, flexural and shearing stresses in beams, combined stresses, deflection of beams, statically indeterminate members, and columns.

C.   DATE LAST REVISED (Month, year): February, 2019

D.   OUTLINE OF MAJOR CONTENT AREAS:
   1. Stress and strain
   2. Mechanical properties of materials
   3. Axial loading
   4. Torsion
   5. Bending
   6. Transverse shear
   7. Combined loading
   8. Stress and strain transformations, including Mohr's circle techniques
   9. Indeterminate structures
   10. Beam design; column buckling

E.   LEARNING OUTCOMES (GENERAL): The student will be able to:
   1. Utilize statics to perform equilibrium analysis.
   2. Draw the stress-strain diagram for an elastic material.
   3. Use Hooke's Law to perform stress-strain analysis.
   4. Perform engineering analysis on loaded members with various types of loading.
   5. Draw shear and moment diagrams.
   6. Perform stress-strain transformation analysis, including Mohr's circle technique.
   7. Design a beam.

F.   LEARNING OUTCOMES (MNTC): NA

G.   METHODS FOR EVALUATION OF STUDENT LEARNING: Methods may include but are not limited to:
   1. Objective exams
   2. Research papers
   3. Quizzes
   4. Written homework
   5. Online homework
   6. Small group projects
   7. Oral presentations

H.   RCTC CORE OUTCOME(S). This course contributes to meeting the following RCTC Core Outcome(s): Critical Thinking. Students will think systematically and explore information thoroughly before accepting or formulating a position or conclusion.

I.   SPECIAL INFORMATION (if any):
   1. Scientific calculator or equivalent is required.