Alexandria Technical and Community College

MEDR 2615: Applied Statics and Strengths of Material

A. COURSE DESCRIPTION

Credits: 3
Lecture Hours/Week: 3
Lab Hours/Week: *
OJT Hours/Week: *

Prerequisites:
This course requires either of these prerequisite categories
1. PHYS 1407 - College Physics I
   Or
2. MATH 1432 - Principles of Trigonometry

Corequisites: None
MnTC Goals: None

This course presents a practical and analytic approach to statics and strength of materials. Areas of study include force vectors, equilibrium of force systems, analysis of structures, friction, moments of inertia, and properties of materials. Emphasis will be placed on calculations necessary for product design.
Prerequisite: PHYS1407 or MATH1432

B. COURSE EFFECTIVE DATES: 08/22/2011 - Present

C. OUTLINE OF MAJOR CONTENT AREAS

1. Use trigonometry to completely solve right triangles and oblique triangles.
2. Represent forces as vectors, and use trigonometry to find resultant forces.
3. Represent systems using free-body diagrams, and apply the laws of equilibrium to solve for unknown forces.
4. Consider friction in systems.
5. Calculate the centroid of geometric shapes.
6. Calculate moment of inertia.
7. Identify types of materials and their properties.
8. Calculate item shear stress and strain.
9. Identify allowable working material.

D. LEARNING OUTCOMES (General)

1. The learner will calculate force vectors and analyze static force systems.
2. The learner will define and calculate material properties and features in the design process.
3. The learner will identify types of material properties and calculate allowable working stress.
4. The learner will analyze connections types and apply the proper material.

E. Minnesota Transfer Curriculum Goal Area(s) and Competencies

None

F. LEARNER OUTCOMES ASSESSMENT

As noted on course syllabus
G. SPECIAL INFORMATION

None noted