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# MIDDLESEX COUNTY COLLEGE

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## COURSE SYLLABUS

<b>Department:</b>	Engineering Technologies
<b>Programs:</b>	Civil Engineering Technology Mechanical Engineering Technology
<b>Course Number:</b>	CIT 105
<b>Title of Course:</b>	Statics for Technicians
<b>Curriculum Coordinator:</b>	Daniel Grek
<b>Designation:</b>	Required Course

### Course Description:

A practical study of statics for the engineering technology student. Topics include force system resultants, free body diagrams, application of the equilibrium equations, analysis of statically determinate trusses and frames, location of centroids and calculation of moments of inertia. Emphasis is placed on the students' understanding and application of basic principles to problem solving.

### Prerequisite:

MCT 101 Introduction to Engineering Technology

### Co-requisite:

MAT 129 or 129A PreCalculus

### Textbook and other required material:

Applied Statics and Strength of Materials by Spiegel, Pearson, 6<sup>th</sup> Ed

### Course Learning Outcomes and their relationships to Student Outcomes:

1. Resolve forces into their components and combine concurrent forces into a single resultant force.
2. For a system of forces and moments acting on a 2D body, calculate an equivalent resultant force and determine its point of application.
3. Draw free body diagrams.
4. Apply the equilibrium equations to calculate reaction forces.
5. Using techniques such as the method of joints or method of sections, determine the forces carried by the members of trusses. **(SO e)**
6. Determine the forces carried by the members of frames. **(SO e)**
7. Calculate the location of the center of gravity and the centroid of various shapes.
8. Calculate the moment of inertia of various cross-sections (including built-up sections).

**Topics Covered:**

- Math review
- Force Systems, Components, Resultants for concurrent force systems
- Moments, Couples, Distributed Forces, Resultants for non-concurrent force systems
- Equations of Equilibrium, Free Body Diagrams, Solution Methods
- Solutions for Parallel force systems, Non-concurrent/Non-parallel force systems
- Trusses by Method of Joints and Method of Sections
- Frames
- Stability and Determinacy
- Properties of Cross Sections: Area, Centroid, Moment of Inertia, Radius of Gyration
- Friction

**Class/Laboratory schedule. Number of sessions each week and duration of each session:**

3 hours of lecture per week for 14 weeks

**Criteria 5 Contribution:**

Technical Content

<b>Prepared By:</b>	A. C. Stickler	<b>Date:</b>	3/29/08
<b>Updated By:</b>	Thom Sabol	<b>Date:</b>	February 13, 2009
<b>Rev 2:</b>	A. C. Stickler LO #1 & 2: Reword to clarify difference between these two. LO 3: break into two LOs (drawing fbd's and applying equations. LO 4: break into two LOs (trusses and frames). Last LO: Simplify wording for clarity.	<b>Date:</b>	1/22/11
<b>Rev 3:</b>	J. Misuraca Update mapping of course outcomes to ABET 2014-2015 student outcomes.	<b>Date:</b>	4/3/14
<b>Rev 4:</b>	General Update	<b>Date:</b>	3/5/21