COLLEGE OF ENGINEERING
THE UNIVERSITY OF TOLEDO

University of Toledo
Mechanical Engineering Technology
Master Syllabus

Course Title: *Statics for Technology* **Course Code & Number:** *MET 2100*

Credit Hour Total: *3*

Lecture Contact Hours: *3* **Lab Contact Hours:** *N/A*

Prerequisite(s): *PHYS 2010*

Text: *Statics and Strength of Materials, by Fa-Hwa Cheng, 2nd Edition, 1997*

Software: *none*

Course Description: (Approved Catalog Description)
Review and extension of static force analysis: free-body diagrams, forces, moments, dry friction and static equilibrium applied to machines, mechanisms, trusses and frames.

Related Program Outcomes:
Outcome b. Apply their knowledge to identify, analyze, and solve technical engineering technology problems.
Outcome f. Apply their knowledge to identify, analyze, and solve broadly – defined ET problems.

Course Objectives:
At the end of the course the student should be prepared to calculate:

1. The components of a force and the resultant force for coplanar force systems
2. The moment caused by force acting on a rigid body
3. The moment due to several concurrent forces
4. The reaction force and moment at the supports or connections with a rigid body
5. External and internal forces in members of a truss using the Method of Joints and the Method of Sections
6. Problems involving dry friction
7. The center of gravity and the centroid for a rigid body
8. The moment of inertia and radii of gyration

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Course Outline:

- Fundamental concepts and principles
- Resultant of coplanar Force Systems: vector representation, moment of force, Varignon's Theorem, force-couple systems, distributed load
- Equilibrium of coplanar Force System: free body diagram
- Analysis of structures: trusses, method of joints, zero-force members, method of section
- Friction: dry friction, wedges, rolling resistance
- Concurrent spatial force system: force acting through two points, equilibrium or resultant forces
- Center of gravity and centroids: bodies & area, distributed line loads
- Area moments of inertia: radii of gyration, composite areas