

**TENTATIVE**

**SYLLABUS**

**FALL 2009**

**ME2530      STATICS AND MECHANICS OF MATERIALS**

**Class Hour:** T,H 4:30 pm – 6:20 pm **Office Hours:** T,H 3:00 pm–4:00 pm  
Room D 115, Parkview Campus.

**Instructor:** Valery Bliznyuk **Office:** G247, Parkview Campus. **Email:**  
[valery.bliznyuk@wmich.edu](mailto:valery.bliznyuk@wmich.edu)

**Website:** <http://homepages.wmich.edu/~vbliznyu/>

**Textbook:** *Statics and Mechanics of Materials. An Integrated Approach*, W.F.Riley,  
L.D.Sturges, D.H.Morris, 2nd, Wiley 2002, ISBN 978-0-471-43446-7.

**TEST AND GRADING POLICIES**

**Grading Scale Test, Homework & Attendance**

HW: 40%; 1st midterm test: 15%; 2nd midterm test: 15%; Final Exam: 30%

Attendance extra up to 6%; Quizzes extra up to 16%

A: above 90% BA: 85% - 89% B: 80% - 84% CB: 75% - 79% C: 70% - 74% DC: 65% - 69% D:  
50% - 64% E: below 50%

**List of Topics**

- |   |   |
|---|---|
| <b>I.</b> General Principles              | <b>VIII.</b> Stress and Strain                |
| <b>II.</b> Force Vectors                  | <b>IX.</b> Mechanical Properties of Materials |
| <b>III.</b> Force System Resultant        | <b>X.</b> Axial Load                          |
| <b>IV.</b> Center of Gravity and Centroid | <b>XI.</b> Torsion                            |
| <b>V.</b> Equilibrium of a Rigid Body     | <b>XII.</b> Bending                           |
| <b>VI.</b> Structural analysis            | <b>XIII.</b> Transverse Shear                 |
| <b>VII.</b> Internal Forces               |   |

**COURSE OBJECTIVES:**

Upon satisfactory completion of this course, the student will be able to:

1. Develop 2– and 3– dimensions Free Body Diagrams of structures and/or structural components
2. Perform equilibrium analysis of rigid bodies in two– and three–dimensions.
3. Determine the forces acting on the elements of frames and trusses.
4. Obtain mathematical and graphic representation of the shear force and bending moment on beams subjected to concentrated and/or distributed loading.
5. Determine the normal and shear stresses produced on elements subjected to different loads.
6. Determine the deformation produced on elements subjected to axial, torsional and bending loads.

### ME 253 Schedule (Tentative)

Week	Date	Topic(s)/Activities(s)	Assignments
Sept. 1	8 10	Lec. Intro to course, syllabus review, Chapter 1 Lec Vectors. Concurrent force systems. Ch.2	HW1
Sept. 2	15 17	Lec. Resolution of force into components Ch. 2-4 Lec. Equilibrium: Concurrent force systems Ch.3	HW2
Sept. 3	22 24	Lec. Stress, strain and deformation: Axial loading Ch.4 Lec: Stress-strain-T relationships Ch. 4-5	HW3
Sept./Oct. 4	29 1	Lec. Thermal strain. Ch. 4-6 Lec. Overview of Chapters 1 to 4.	HW4
<b>Oct.</b> 5	<b>6</b> 8	<b>Test 1</b> Lec. Moments and their characteristics. Ch.5	HW5
Oct. 6	13 15	Lec. Couples. Ch. 5-5 Lec Center of gravity and center of mass. Ch. 5-7	HW6
Oct. 7	20 22	Lec. Distributed loads on structural members. Ch. 5-10 Lec. Free-body diagrams. Ch. 6-2	HW7
Oct. 8	27 29	Lec. Frames and machines. Ch. 6-4. Lec. Plane trusses. Ch. 6-6	HW8

Week	Date	Topic(s)/Activities(s)	Assignments
Nov.	3	Lec. Friction. Ch. 6-8	HW9
9	5	Lec. Overview of Chapters 5 and 6	
<b>Nov.</b>	<b>10</b>	<b>Test 2</b>	
10	12	Lec. Torsional loading: Shafts. Ch. 7	HW10
Nov.	17	Lec. Work of forces and couples. Ch. 7-6	
11	19	Lec. Flexural loading. Stresses in beams. Ch. 8	HW11
Nov.	24	Lec. The elastic flexure formula. Ch. 8-5	HW12
12	<b>26</b>	<b>Thanksgiving No Class,</b>	
Dec.	1	Lec. Shear forces and bending moments in beams. Ch. 8-6	
13	3	Lec. Shearing stresses in beams. Ch. 8-8	HW13
Dec.	8	Lec. Flexural loading. Beam deflections. Ch. 9	HW14
14	10	Lec. Overview of the Course	

**Final Exam December**