

**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:**  
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**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.

## GENERAL CLASS POLICY

1. Make-up tests will not be provided, and the missed test will be graded as “ZERO”. If a student misses a midterm test for a medical reason, the student must provide a doctor’s statement. In that case the missed test will be transferred and credited toward the Final Examination: (For example, if you missed the second test for a medical reason, the final examination will be counted as  $30\%+30\%=60\%$  of the total grade). Every student must take the final examination and no make-up exam will be offered.
2. Homework problems are due at the beginning of each class and **no credit** will be given for late homework. Please prepare your homework solutions in engineering paper and STAPLE them. Attendance will be checked with homework. If you did not prepare homework you can turn in a sheet with your name for checking attendance.
4. Quizzes will be given from time to time during the semester without previous notification. The extra-credit will be added directly to your final grade. No make-up problems will be provided for extra-credit quizzes under any circumstance.
5. There will be NO curving of the grades.
6. You are responsible for making yourself aware of and understanding the policies and procedures in the Undergraduate and Graduate Catalogs that pertain to Academic Honesty. These policies include cheating, fabrication, falsification and forgery, multiple submission, plagiarism, complicity and computer misuse. [The policies can be found at [www.wmich.edu/catalog](http://www.wmich.edu/catalog) under Academic Policies, Student Rights and Responsibilities.] If there is reason to believe you have been involved in academic dishonesty, you will be referred to the Office of Student Conduct. You will be given the opportunity to review the charge(s). If you believe you are not responsible, you will have the opportunity for a hearing. You should consult with me if you are uncertain about an issue of academic honesty prior to the submission of an assignment or test.

### ME 253 Schedule (Tentative)

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