

**EMA 3702 MECHANICS of MATERIALS**  
**Summer B 2016, Session U01B (56536)**

**Basic Information**

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Office: EC3172      Office Hours: Mon, Wed, Fri 14:00-16:00 or by appointment  
Class Hours & Classroom: Mon, Wed, Fri, 9:30-11:45 in EC1112  
Prerequisites: EGN3311 Statics

**Course Description**

“A mid-level course addressing the selection of engineering materials based on static and dynamic loadings, environmental analysis and the experimental analysis of mechanical systems. Emphasis on metals and composite materials.” (FIU Catalog entry)

**Course Objective** (Based on syllabus by Dr. K Wu, Dr. Cesar Levy, and Dr. Aparna Aravelli)

- Identify mechanical properties and the characteristics of elastic behavior for material types.
- Calculate the stress and strain configuration at a point for a specific loading arrangement.
- Transform plane stress and strain configurations and identify principal stress and Principal Axes.
- Use the appropriate failure criteria for diverse situation and/or materials (elastic behavior only).
- Design prismatic beams.
- Determine the deflection at any point of a beam, given the loading and end conditions.
- Determine the load, shear and moment diagrams for a beam given the loading and end conditions.

**Textbook & Other Course Materials**

- Mechanics of Materials, 7<sup>th</sup> ed, Beer, Johnston, Dewolf, and Mazurek, McGraw Hill Education, 2015, ISBN 9780073398235
  - Via MHEducation.com:  
<http://www.mheducation.com/highered/product/mechanics-materials-beer-johnston-jr/0073398233.html>
  - Via Amazon:  
<https://www.amazon.com/Mechanics-Materials-7th-Ferdinand-Beer/dp/0073398233>

**Grading**

- Homework (20 points)
- Attendance (15 points, 1 for each class, in the form of class exercise)
- Two exams (30 points for mid-term exam and 35 points for final exam)
- Overall grade: A:  $\geq 90$ ; A-: 87-89.9; B+: 84-86.9; B: 80-83.9; B-: 77-79.9; C+: 74-76.9; C: 70-73.9; C-:  $< 67$ -69.9; D+: 64-66.9; D: 60-63.9; D-: 57.0-59.9; F:  $< 57$

**Course Policy**

- Attendance required; Cell phones and other device on silent mode

- Students can discuss homework problems, but must independently finish it
- Exams will be open-book but NO electronic device other than simple calculator allowed
- Grade discrepancies – resolve within the next business day
- Request for “make-up” exams will NOT be accepted unless *convincing, life-threatening* emergency occurred and an official note explaining the life-threatening condition will be needed.
  - Excuses based on doctor’s notes for symptoms such as (not limited to) cold, flu, headache, panic strike, or verbal note about traffic accident, or family issues will NOT be accepted – It has to be life-threatening emergency with convincing evidence.
- Accommodate disability (<http://drc.fiu.edu/>) or religious holidays
- NO cheating or plagiarizing in ANY form (Check with me if questions)
  - No excuses will be accepted
  - Will be reported and handled according to FIU policy
  - FIU policy at [https://ugrad.fiu.edu/academic\\_misconduct/Pages/Home.aspx](https://ugrad.fiu.edu/academic_misconduct/Pages/Home.aspx)

### **ME Program Educational Objectives**

- Broad and in-depth knowledge of engineering science and principles in the major fields of Mechanical Engineering for effective engineering practice, professional growth, and as a base for life-long learning
- The ability to communicate effectively and to articulate technical matters using verbal, written, and graphic techniques
- The ability to utilize analytical and experimental methods and modern computer technology for decision making, engineering design, and to solve realistic engineering problems
- A sense of professional and social responsibility, including a commitment to protect both occupational and public health and safety, developed through consideration of moral, social, and ethical paradigms related to the engineering profession and practice.

### **MME Program Outcomes**

- A. Ability to apply knowledge of mathematics including statistics, multivariable calculus and differential equations, science including physics, and engineering.
- C. Ability to design a system, component, or process to meet desired needs.
- E. Ability to identify, formulate and solve engineering problems.
- F. Understanding of professional and ethical responsibility.

**Tentative Schedule & Key Dates**

Week	Date	Day	Hour	Cumulative hour	Textbook Chapter
1	6/27	M	2.25	2.25	1
1	6/29	W	2.25	4.50	2
1	7/1	F	2.25	6.75	2
2	7/4	M	0.00	6.75	NA
2	7/6	W	2.25	9.00	3
2	7/8	F	2.25	11.25	3
3	7/11	M	2.25	13.50	4
3	7/13	W	2.25	15.75	4
3	7/15	F	2.25	18.00	5
4	7/18	M	2.25	20.25	5
4	7/20	W	0.00	20.25	Midterm
4	7/22	F	2.25	22.50	6
5	7/25	M	2.25	24.75	7
5	7/27	W	2.25	27.00	8
5	7/29	F	2.25	29.25	9
6	8/1	M	2.25	31.50	10
6	8/3	W	2.25	33.75	flexible
6	8/5	F	0.00	33.75	Final exam