

UNIVERSITY OF MARYLAND BALTIMORE COUNTY
Department of Mechanical Engineering

ENME 220 – MECHANICS OF MATERIALS: FALL 2014

Prerequisites: Statics (ENME-110: **Must have earned a grade of B or better for ME Gateway**) Calculus II (MATH-152) and Physics I (PHYS-121)

Instructor: Panos Charalambides, Professor
ECS 211 Tel. # (410)-455-3346). E-mail: panos@umbc.edu

Office Hrs: 3:00 –4:00 p.m., Tuesdays & Thursdays (and by appointment)

Graduate Teaching Assistants:

Kourosh M Kalayeh, *kourosh2@umbc.edu*, ENG227, x5-3453 (Full TA)

Undergraduate Fellows:


Mr. Nelson Glover, *nelson5@umbc.edu*

Ms. Stephanie Muncill, *smun1@umbc.edu*

Mr. Stefan Wroblewski, *stefanw1@umbc.edu*

Ms. Caroline Zellhofer, *caroz1@umbc.edu*

Mr. Xiao Li, *li6@umbc.edu*

	<p style="text-align: center;"><u>ACADEMIC INTEGRITY</u></p> <p>“By enrolling in this course, each student assumes the responsibilities of an active participant in UMBC’s scholarly community in which everyone’s academic work and behavior are held to the highest standards of honesty. Cheating, fabrication, plagiarism, and helping others to commit these acts are all forms of academic dishonesty, and are wrong. Academic misconduct could result in disciplinary action that may include, but is not limited to, suspension or dismissal. To read the full Student Academic Conduct Policy, consult the UMBC Student Handbook, the Faculty Handbook, or the UMBC policies section of the UMBC Directory.” <i>UMBC Faculty Senate, February 13, 2001.</i></p>
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Mechanical Engineering repeat policy:

At UMBC, students may not register for a course more than two times. They are considered registered for a course if they are enrolled after the end of the schedule adjustment period – Tuesday, February 8th, this semester. Students may petition the Office of Undergraduate Education for a third and final attempt of a course taken at UMBC or another institution; the Department of Mechanical Engineering, however, will not support petitions to repeat required lower-level courses (100-200) for the purpose of continuing in the major.

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ENME 220 FALL 2014

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Section 0101 Lectures: 10:00am –11:15 am. Tuesdays & Thursdays Room: **ENG027 (LH 5)**
Honors Section: As in regular section, plus 12:00 noon-12:50 pm, Tue & Th, **ITE237**.

Discussion	220-02	9:00-9:50am.	Fridays	Room: ITE 237.
Discussion	220-03	10:00-10:50am.	Fridays	Room: Sondheim 110.
Discussion	220-04	11:00-11:50am.	Fridays	Room: ITE 237.
Discussion	220H-02	12:00-12:50pm.	Thursdays	Room: ITE237.

Text: *Mechanics of Materials*, Sixth Edition, W.F. Riley, L.D. Sturges and D.H. Morris.

Instructor: Panos Charalambides, Professor
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TA and Teaching Fellows (TFs) will be assigned to homework, quiz and exam grading, tutoring and delivery of Discussion sessions. TA and TF office hours are shown on attached weekly schedule.

Grading:	Homework	15%	90-100	A
	Discussion work	10%	80-89	B
	Quizzes	20%	70-79	C
	Two Term Exams	30%	60-69	D
	Final Exam	25%	<60	F

Quizzes: There will be **seven announced** and **up to three unannounced** 20 minute quizzes at the start or end of the class. Announced quizzes are indicated on syllabus.

Homework:

- Six homework problems will be assigned each period two of which will be turned in at the beginning of the next period to be graded.
- Half credit is given for late homework.
- No homework will be accepted which is more than one period late.
- HW sets to be graded will be posted on BB.
Practice HW problems are listed on day-by-day syllabus.
- Homework must be on 8 1/2"x11" paper. (No spiral notebook paper).

Homework grading considerations. (Scale of 10pts)

- | | |
|---|------------|
| i) Absence of Free Body Diagram when needed | -3pts |
| ii) Absence of proper vector or tensor(matrix) notation when needed... | -2pts |
| iii) Incorrect units | -1pt |
| iv) Correct answer without correct work | 1/2 credit |
| v) The lowest quiz and homework grades will be dropped at end of semester | |

*** Regular attendance is strongly encouraged; Poor attendance most often results in a failing grade.

*** Please feel free to ask questions during class or during office hours.

ENME 220-MECHANICS OF MATERIALS

<u>Material</u>		<u>No of Classes</u>
Ch. 1, 1-5	Introduction and Review of Statics	1
Ch. 2, 1-12	Analysis of Stress-Concepts and Definitions	5
Ch. 3, 1-7	Analysis of Strain-Concepts and Definitions	3
Ch. 4, 1-5	Material Properties and Stress-Strain Relationships	2
<hr/>		
Ch.5, 1-6, 8, 9, 11	Axial Loading Applications and Pressure Vessels	3
Ch. 6, 1-5, 7-9, 13	Torsional Loading	3
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Ch. 7, 1-8, 10, 13-14, 16-17	Flexural Loading: Stresses in Beams	5
Ch.8, 1-4, 6, 9	Flexural Loading: Beam Deformations	2
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Ch. 9, 1-3, 4, 6	Columns	2
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	Review & Special Topics	1
	Exams	2
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Total Classes		29

Text: *Mechanics of Materials*, Sixth Edition, W.F. Riley, L.D. Sturges and D.H. Morris.

DISCUSSION SESSIONS-Rules and Expectations
ENME 220/220H -- FALL 2014

Instructor: Panos G. Charalambides

Discussion	220-02	9:00-9:50am.	Fridays	Room: ITE 237.
Discussion	220-03	10:00-10:50am.	Fridays	Room: Sondheim 110.
Discussion	220-04	11:00-11:50am.	Fridays	Room: ITE 237.
Discussion	220H-02	12:00-12:50pm.	Thursdays	Room: ITE237.

Text: *Mechanics of Materials*, Sixth Edition, W.F. Riley, L.D. Sturges and D.H. Morris.

Discussion session rules

The discussion sessions will feature an active learning component wherein the student actively participates in solving example problems. Each Discussion session will be supervised/delivered by a team of two Assistants (a combination of Graduate Teaching Assistants, and Graduate and Undergraduate Teaching Fellows). The Assistants will maintain an attendance log.

Arriving early for prompt start of Discussion session

Students are encouraged to arrive early for a prompt start of the discussion session at which point doors will be closed. However, students will be allowed in the classroom for the first five minutes at half credit of their work. Students arriving more than five minutes late will be allowed to participate in the session but no credit will be given to their work.

Discussion session process

At the beginning of each Discussion session, the Teaching Assistants will distribute a handout featuring four to six problems mainly taken from the textbook. Students will be given 25 minutes to work either individually or in teams of two or three to solve the problems. The Assistants will take the second half of the Discussion period to answer questions and possibly solve one or two problems identified by the students.

IMPORTANT

At the end of each session each student will be asked to turn in his/her work completed during the session. The work will be evaluated by the Assistants and returned to the students at the next session. No Discussion work will be accepted outside the Discussion session. Discussion session work is weighted at 10% of the final grade.

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INITIAL VERSION (8/25/14)
ENME 220-MECHANICS OF MATERIALS - Fall 2014
P.G. Charalambides

UNIVERSITY OF MARYLAND BALTIMORE COUNTY
Department of Mechanical Engineering

Period	Date	Day	Reading Chapter-sections	Quizzes & Exams	HW Problems* To be graded	Practice HW Problems♥
1	8/28	Th	Ch. 1, 1-5		1.6, 1.56 KK & NG	1.9, 1.12, 1.14, 1.57
2	9/2	Tue	Ch. 2, 1-5	Q – SM & SW	2.8, 2.14 CZ & XL	2.2, 2.9, 2.25, 2.32
3	9/4	Th	Ch. 2 6-7		2.37, 2.46 KK & NG	2.36, 2.38, 2.48, 2.60
4	9/9	Tue	Ch. 2, 8-10	Q – CZ & XL	2.48, 2.58 SM & SW	2.45, 2.47, 2.63, 2.67
5	9/11	Th	Ch. 2, 10-12		2.70, 2.90 KK & NG	2.73, 2.76, 2.92, 2.119
6	9/16	Tue	Ch. 2, 10-12		HW#6 SM & SW	pr1, pr2, pr3, pr4
7	9/18	Th	Ch. 3, 1-3		HW#7 CZ & XL	pr1, pr2, pr3, pr4
8	9/23	Tue	Ch. 3, 4-6	Q – KK & NG	HW#8 SM & SW	pr1, pr2, pr3, pr4
9	9/25	Th	Ch. 3, 7		HW#9 CZ & XL	pr1, pr2, pr3, pr4
10	9/30	Tue	Ch. 4, 1-3		HW#10 KK & NG	pr1, pr2, pr3, pr4
11	10/2	Th	Ch. 4, 4-5		HW#11 SM & SW	pr1, pr2, pr3, pr4
12	10/7	Tue	Ch. 5 1-3	Q– SM & SW	HW#12 CZ & XL	pr1, pr2, pr3, pr4
13	10/9	Th	Ch. 5 4-5		HW#13 KK & NG	pr1, pr2, pr3, pr4
14	10/14	Tue	Ch. 5, 6,8,9,11	EXAM I (Chapts 1-5) -ALL	HW#14 SM & SW	pr1, pr2, pr3, pr4
15	10/16	Th			--	
16	10/21	Tue	Ch. 6, 1-4		HW#15 KK & NG	pr1, pr2, pr3, pr4
17	10/23	Th	Ch. 6, 5, 7		HW#16 SM & SW	pr1, pr2, pr3, pr4
18	10/28	Tue	Ch. 6, 8-9, 13	Q– CZ & XL	HW#17 KK & SG	pr1, pr2, pr3, pr4
19	10/30	Th	Ch. 7, 1-4		HW#18 SM & SW	pr1, pr2, pr3, pr4
20	11/4	Tue	Ch. 7, 4-7		HW#19 CZ & XL	pr1, pr2, pr3, pr4
21	11/6	Th	Ch. 7, 5-8		HW#20 SM & SW	pr1, pr2, pr3, pr4
22	11/11	Tue	Ch. 7, 10, 13, 14	Q– KK & NG	HW#21 KK & NG	pr1, pr2, pr3, pr4
23	11/13	Th	Ch. 7, 16-17		HW#22 CZ & XL	pr1, pr2, pr3, pr4
24	11/18	Tue	Ch. 8 1-3		HW#23 KK & NG	pr1, pr2, pr3, pr4
25	11/20	Th	Ch. 8, 4, 6, 8		HW#24 CZ & XL	pr1, pr2, pr3, pr4
26	11/25	Tue	Ch. 8, 8-10	Q– SM & SW THANKSGIVING BREAK	HW#25 CZ & XL	pr1, pr2, pr3, pr4
--	11/27	Th			--	pr1, pr2, pr3, pr4
27	12/2	Tue		EXAM II (Chapts 5-8) ALL	--	
28	12/4	Th	Ch. 9, 1-3		HW#26 SM & SW	pr1, pr2, pr3, pr4
29	12/9	Tue	Ch. 9, 3, 4?, 6?	Study Day	HW#27 CZ & XL	pr1, pr2, pr3, pr4
--	12/11	Th				

FINAL EXAM WEEK
Friday, December 13 – Thursday, December 19, 2013

* Homework problems to be graded will be turned in at the beginning of next class from date assigned.

♥ Practice problems are assigned from course textbook.

ENME220H-MECHANICS OF MATERIALS (Honors-Fall 2014)

Expectations

---*Meet one additional hour per week:*

Tuesdays, 12:00 noon-12:50pm. ITE237

---*Adhere to an enriched syllabus*

Address theoretical concepts and complete relevant theoretical problems.

---*Go on tours both on-campus and off-campus. Visits will highlight and bring to the front the relationships between **Infrastructure** and **Mechanics of Materials**.*

Focus may include, buildings, roads, bridges, parking garages, traffic and placement of traffic lights/signals/signs, water management/storage, waste management, energy storage and distribution, green energy and other infrastructure related engineering structures and technologies.

---*Interact with technical staff from the Baltimore City Public Works endorsed by the office of Mayor Stephanie Rawlings-Blake.*

----- Original Message -----

Subject:Re: Advancing UMBC's BreakingGround initiative

Date:Mon, 26 Aug 2013 14:57:44 +0000

From:Chow, Rudy <Rudy.Chow@baltimorecity.gov>

To:Panos Charalambides <panos@umbc.edu>

CC:Foxx, Al <Al.Foxx@baltimorecity.gov>, panos@umbc.edu <panos@umbc.edu>, sbradley@umbc.edu <sbradley@umbc.edu>, eggleton@umbc.edu <eggleton@umbc.edu>, Black, Eloise <Eloise.Black@baltimorecity.gov>

Hello Panos,

It is great to hear from you. I would very much enjoy coming back to UMBC to further our discussion on Baltimore's Infrastructure crisis in the coming semester.

I will have Ms. Black work with you on my availability.

Regards,

Rudy

---*Empower students to engage in Mechanics of Materials related Projects with the City of Baltimore and Explore Engineering Partnerships through Internships and Employment.*

---*Present Group Projects to entire class at end of semester.*

Grading

Regular section expectations: 90%

Additional Honor's section Homework: 5%

Group Project: 10%

Participation: 5%

Honor's Section Syllabus

<i>Week</i>	<i>Date</i>	<i>Reading</i>	<i>Objective</i>
1	9/2	Ch.1-Ch.2_7	Introduction to the Honors Experience -P.G. Charalambides
2	9/9	Ch.2_8-_12	Visit by Baltimore City Technical Staff led by Director of Public Works Mr. Rudy Chow.
3	9/16	Ch.2-Ch.3_3	Skype with GE Aviation. Yuan Alvarez.
4	9/23	Ch.3_4-_7	Skype with GE Appliances. Payam Motabar.
5	9/30	Ch.4_1-_5	Tour of City of Baltimore Water Treatment plant.
6	10/7	Ch.5_1-_5	Project proposals
7	10/14	Review Ch.1-Ch.5	Visit by Baltimore City Technical Staff led by Director of Public Works Mr. Rudy Chow.
8	10/21	Ch.6_1-7	Tour of City of Baltimore Swage Treatment Plant
9	10/28	Ch.6_8_9_13	Project progress reports
10	11/4	Ch.7_1-_8	Visit by Baltimore City Technical Staff?
11	11/11	Ch.7_10,13.14,16,17	Team meetings
12	11/16	Ch.8_1-3	Writing a Blog
13	11/25	Ch.8_4, 6,8,9,10	Open
14	12/2	Ch. 8 & Ch.9_1-_3	Open
15	12/9	Ch. 9_1-6	Project Presentations

ENME 220-MECHANICS OF MATERIALS

Weekly TA & Teaching Fellows Office Hours

Time	Monday	Tuesday	Wednesday	Thursday	Friday
8:00-8:30 am					
8:30-9:00 am					
9:00-9:30 am					ENME220 DISC 02 9-9:50am ITE237
9:30-10:00 am					
10:00-10:30 am		ENME220 Regular Lecture 10-11:15am ENG027		ENME220 Regular Lecture 10-11:15am ENG027	ENME220 DISC 03 10-10:50am Sondheim 110
10:30-11:00 am					
11:00-11:30 am					ENME220 DISC 04 11-11:50am ITE237
11:30-12:00 noon					
12:00 noon - 1:00pm		Honors Section ITE237		Honors Section DISC As needed	
1:00 – 1:30 pm	1-2:00pm ENG229B Stephanie Muncil	1-2:00pm ENG229B	1-2:00pm ENG229B Stephanie Muncil	1-2:00pm ENG229B	
1:30 – 2:00 pm					
2:00 – 2:30 pm	2-3:00pm ENG229B Caroline Zellhofer	2-3:00pm ENG229B Nelson Glover	2-3:00pm ENG229B Caroline Zellhofer	2-3:00pm ENG229B Nelson Glover	
2:30 – 3:00 pm					
3:00 – 3:30 pm	3-4:00pm ENG229B Xiao Li	3-4:00pm ENG211 Panos Charalambides	3-4:00pm ENG229B Xiao Li	3-4:00pm ENG211 Panos Charalambides	
3:30 – 4:00 pm					
4:00 – 4:30 pm	4-5:00pm ENG229B Kourosh Kalayeh	4-5:00pm ENG229B Stefan Wroblewski	4-5:00pm ENG229B Kourosh Kalayeh	4-5:00pm ENG229B Stefan Wroblewski	
4:30 – 5:00 pm					

Prerequisite Verification Form

ENME220-Mechanics of Materials

Fall 2014

Instructor: Panos G. Charalambides

The prerequisites for ENME220 are:

ENES110-Statics

MATH 152-Calculus II

PHYS-121-Physics

Student enrolled in ENME220 must have completed above courses with a C or better.

This is to verify that I,

Student Name _____

Campus id: _____

meet all class prerequisites listed above.

_____ Date _____

Student Background Data Form (Optional!)

Name_____

Age_____

Year in school_____

Home Town_____

College & major_____

Why did you choose your major?_____

Interests:

Background & Miscellaneous: