



## PME 235002 Mechanics of Materials

### 材料力學

Spring 2019

Instructor:	Prof. Jen-Yuan (James) Chang 張禎元 教授	Credits:	3 credits.
Class meetings:	<b>T3T4R3 Engineering Building I – R214</b>	Office hours:	Tuesdays 17:30-18:30
Language:	This course will be offered in English		
Course description:	This course is a foundation to many advanced techniques that allow engineers to design structures, predict failures and understand the physical properties of materials. Mechanics of Materials gives students basic tools for stress, strain and strength analyses. The course is designed to introduce basic principles of statics for rigid and deformable bodies. The main objective of this course is to help the students develop engineering intuition for equilibrium, properly constrained systems, and deformation under external loadings. Methods for determining the stresses, strains and deflections produced by applied loads are learned through analyzing and designing structural members subjected to tension, compression, torsion and bending using fundamental concepts of stress, strain, and elastic behavior. It is also anticipated that theory and design approaches for the mechanics of deformable bodies will help prepare students for complex systems that will be encountered in advanced design courses such as mechanical designs, manufacturing, and micro-electro-mechanical systems (MEMS).		
Textbook:	Russell C. Hibbeler, Mechanics of Materials, 10th ed. in SI units, Pearson, 2018		
References:	B.J. Goodno and J.M. Gere, "Mechanics of Materials", 9th ed. In SI units, Carnegie Learning, 2018. F. P. Beer, E. R. Johnston, Jr., J. T. DeWolf, and D. F. Mazurek, Mechanics of Materials, 6 <sup>th</sup> Global Edition in SI units, McGraw-Hill, New York, NY, USA, 2012.		
Teaching Method:	Classroom lectures will be offered in English with teaching materials posted in Moodle. In addition to lectures, in-class exercise sessions will be arranged and carried by teaching assistants.		
Assessments:	Quiz	20%	
	Term project	10%	
	Two Midterm Exams	40% (2 @ 20% each)	
	Final Exam	30%	

A curve will NOT be used to establish grades in this course. The portion of the grade for class work will be established from short in-class quizzes and from homework problems collected occasionally for grades. Missed daily quizzes CANNOT be made up. Please note on your assignment sheet when hour quizzes are scheduled. Missed hour quizzes can be made up only under excepted circumstances or if arrangements are made in advance. Reasonably neat work is expected on all material submitted for grading. Always bring your textbook, calculator, paper and pencil to class.

#### Special note:

This course offered in English will use the same textbook, same assessment method, and same midterms and final examination questions, as well as the same teaching schedule listed in the following table. Students are encouraged to utilize this opportunity to enhance your English ability for learning as well as to strengthen learning outcomes should you feel needed to attend the companioned course offered in Chinese.



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#### Course Schedule:

Week	Date	Hour	Content	備註
1	2/19, 2/21	3	Stress	(18)開始上課
2	2/26, 2/28	3	Strain, Mechanical Properties of Materials	(28)和平紀念日 (1)和平紀念日 彈性放假 (1-3)梅竹賽
3	3/5, 3/7	3	Mechanical Properties of Materials, Axial Load	
4	3/12, 3/14	3	Axial Load, Torsion	
5	3/19, 3/21	3	Torsion	
6	3/26, 3/28	3	Mid-term Exam (I)	
7	4/2, 4/4	2	Bending	(4)兒童節 (5)民族掃墓節
8	4/9, 4/11	3	Bending, Transverse Shear	(8)停課
9	4/16, 4/18	3	Transverse Shear, Combined Loadings	
10	4/23, 4/25	3	Stress Transformation	(27)校慶環校路跑
11	4/30, 5/2	3	Strain Transformation	(28)校慶活動日
12	5/7, 5/9	3	Mid-term Exam (II)	
13	5/14, 5/16	3	Design of Beams and Shafts	(15)全校游泳賽
14	5/21, 5/23	3	Deflection of Beams and Shafts	
15	5/28, 5/30	3	Deflection of Beams and Shafts, Buckling of Columns	
16	6/4, 6/6	3	Buckling of Columns	(7)端午節
17	6/11, 6/13	3	Energy Methods/Term Project	(15)畢業典禮
18	6/18, 6/20	3	Final Exam	