

九十九學年度第一學期課程內容大綱

課程名稱：材料力學課號：543 U5870

學分：3

開授年級：化學工程學系

授課老師：陳國慶

上課時間/教室：Tue (3,4), Wed (7)/應力館111教室

◎ COURSE OUTLINE:

1. Introduction and Review of Statics
2. Analysis of **Stress**: Concepts and Definitions
3. Analysis of **Strain**: Concepts and Definitions
4. Material Properties and Stress-Strain Relationships
5. Axial Loading Applications and Pressure Vessels
6. Torsional Loading of Shafts
7. Flexural Loading: Stresses in Beams
8. Flexural Loading: Beam Deflections

◎ Textbook:

W. F. Riley, L. D. Sturges, and D. H. Morris, *Mechanics of Materials*, 6th Ed., John Wiley & Sons, 2006.

Reference:

J.M. Gere (and S. T. Timoshenko), *Mechanics of Materials*, 6th Ed., Thomson Brooks/Cole, 2004.

◎ Grading:

Homework: 20%

Midterm examination: 40%

Final examination: 40%

◎ Contact Telephone Number:

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週次	日期	課程內容	日期	課程內容
1	9/14(二)	Statics (free body)	9/15(三)	Statics (equilibrium)
2	9/21	Statics (internal forces)	9/22	中秋節放假
3	9/28	Stress (normal, shear, inclined)	9/29	Stress (at a general point)
4	10/05	Stress (plane stress, transformation equations)	10/06	Stress (principle stress)
5	10/12	Stress (Mohr's circle)	10/13	Review of stress
6	10/19	Strain (deformation, at a point)	10/20	Strain (transformation equations)
7	10/26	Strain (transformation equations)	10/27	Review of strain
8	11/02	Material properties (Hooke's law)	11/03	Material properties (Hooke's law)
9	11/09	Non-isotropic Materials	11/10	Review of material properties
10	11/16	期中考	11/17	Axial loading
11	11/23	Axial loading (thermal effects, stress concentration, thin-walled vessels)	11/24	Axial loading (combined effects, thick-walled vessels)
12	11/30	Review of axial loading, Torsion (shearing stress)	12/01	Torsion (shearing stress and strain)
13	12/07	Torsion (displacement, stress on oblique planes)	12/08	Torsion (power transmission, indeterminate members)
14	12/14	Torsion (inelastic, noncircular)	12/15	Review of torsion
15	12/21	Beams (flexural stress, flexure formula)	12/22	Beams (shear forces and moments in beams)
16	12/28	Beams (shear forces and moments in beams)	12/29	Beams (shear stress and others) and Review of beams
17	1/04	Deflection of a beam	1/05	Deflection of a beam
18	1/11	期末考		