

九十六學年度第一學期課程內容大綱

課程名稱：材料力學

學分：3

授課老師：陳兆勛

翁宗賢

陳國慶

課號：543 U5870

開授年級：化學工程學系

上課時間/教室：Tue (3,4), Fri (2); 應109

Mon (7,8), Wed (5); 應233

Tue (3,4), Fri (2); 應113

◎ 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:

陳兆勛老師 (應力館412): 3366-5682; 呂信諺助教 (化工館221): 3366-3025

翁宗賢老師 (應力館213): 3366-5666; 胡致維助教 (化工館108A): 3366-3019

陳國慶老師 (應力館310): 3366-5676; 張名惠助教 (化工館127): 3366-3012

週次	日期	課程內容	日期	課程內容
1	9/18(二)	Statics (free body)	9/21(五)	Statics (equilibrium)
2	9/25	中秋節放假	9/28	Statics (internal forces)
3	10/02	Stress (normal, shear, inclined)	10/05	Stress (at a general point)
4	10/09	Stress (plane stress, transformation equations)	10/12	Stress (principle stress)
5	10/16	Stress (Mohr's circle)	10/19	Review of stress
6	10/23	Strain (deformation, at a point)	10/26	Strain (transformation equations)
7	10/30	Strain (transformation equations)	11/02	Review of strain
8	11/06	Material properties (Hooke's law)	11/09	Material properties (Hooke's law)
9	11/13	Non-isotropic Materials	11/16	Review of material properties
10	11/20	Axial loadings (期中考 19:00 ~ 20:40)	11/21	Axial loading
11	11/27	Axial loading (thermal effects, stress concentration, thin-walled vessels)	11/30	Axial loading (combined effects, thick-walled vessels)
12	12/04	Review of axial loading, Torsion (shearing stress)	12/07	Torsion (shearing stress and strain)
13	12/11	Torsion (displacement, stress on oblique planes)	12/14	Torsion (power transmission, indeterminate members)
14	12/18	Torsion (inelastic, noncircular)	12/21	Review of torsion
15	12/25	Beams (flexural stress, flexure formula)	12/28	Beams (shear forces and moments in beams)
16	1/01	元旦假日	1/04	Beams (shear forces and moments in beams)
17	1/08	Beams (shear stress and others) and Review of beams	1/11	Deflection of a beam
18	1/15	Deflection of a beam (期末考 19:00 ~ 20:40)		

期中考時間地點

96 年 11 月 20 日星期二晚上 19:00 ~ 20:40

學號單號者在 111 教室、學號雙號者在 113 教室

期末考時間地點

97 年 1 月 15 日星期二晚上 19:00 ~ 20:40

學號單號者在 111 教室、學號雙號者在 113 教室