



Course Outline

- Title : Elasticity (彈性力學)
- Type : Required for graduate students
- Credit : 3
- Prerequisite : Physics, Engineering Mechanics, Engineering Mathematics
- Lecturer : Chung Fang
- Description : Elasticity is a fundamental course of engineering mechanics, in which the framework of mathematical theory of an elastic body and its applications are delineated. Some basic problems of linear elastic materials are formulated and solution approaches introduced. The lecture is essential to the problems of deformable bodies.
- Contents :
 1. Fundamental concepts and mathematical prerequisites
 2. Stress analysis
 3. Strain analysis
 4. Linear elastic materials
 5. Formulation, solution strategies and some elementary problems
 6. Two-dimensional problems
 7. Extension, torsion, and flexure of elastic cylinders
 8. Introduction to anisotropic elasticity and thermoelasticity
- Textbook & References :
 1. **Sadd MH (2009) Elasticity: Theory, Applications, and Numerics. 2nd ed., Academic Press, New York**
 2. **Tarn JQ (2011) Lecture Notes on Elasticity, Department of Civil Engineering, National Cheng Kung University, Taiwan**
 3. Chadwick P (1976) Continuum Mechanics: Concise Theory and Problems. Dover
 4. Liu IS (2002) Continuum Mechanics. Springer Verlag, New York
 5. Hutter K, Joehnk K (2004) Continuum Methods of Physical Modeling. Springer Verlag, New York
 6. Boresi AP, Chong K, Lee JD (2011) Elasticity in Engineering

Mechanics, Wiley, New York

7. Timoshenko S (1970) Theory of Elasticity. McGraw-Hill, New York
8. Sokolnikoff IS (1956) Mathematical Theory of Elasticity. Dover
9. Lekhnitskii SG (1985) Theory of Elasticity of an Anisotropic Body. Mir, Moscow
10. Landau LD, Lifshitz EM (1986) Theory of Elasticity. Pergamon Press, New York
11. Fluegge W (ed) (1962) Handbook of Engineering Mechanics. McGraw-Hill, 1962

- Grading Policy : 1st Midterm exam : 25%, 2nd Midterm exam : 35%,
Final exam : 40%
- Office hour : AM 08:00 – 10:00, Friday, Room 47248, CE Department
- Advanced Courses : Continuum Mechanics
Anisotropic Elasticity
Fracture Mechanics
Earth Materials
Rheology