

98-2 大葉大學 完整版課綱

基本資訊

課程名稱	固體力學	科目序號 / 代號	1431 / MUR5042
開課系所	機械與自動化工程學系碩士班	學制 / 班級	研究所碩士班1年1班
任課教師	林陽泰	專兼任別	客座
必選修 / 學分數	選修 / 3	畢業班 / 非畢業班	非畢業班
上課時段 / 地點	(四)789 / H467	授課語言別	中文

課程簡介

固體力學主要在探討固體在力或其他干擾作用下產生的變形及運動，連結某質點之瞬時與原始位置間的位移最被重視。

課程大綱

1. Tensor Analysis
2. Stress and Strain Analysis
3. Linear Elasticity
4. Solution of Problems in Elasticity by potential and Complex Variables
5. Elastic and Plastic Behavior of Materials
6. Variational Calculus, Energy Method
7. Viscoelasticity
8. Thermoelasticity
9. Plasticity

基本能力或先修課程

工程力學、工程數學、材料力學

課程與系所基本素養及核心能力之關連

具備宏觀的國際觀能力

成績稽核

教科書(尊重智慧財產權，請用正版教科書，勿非法影印他人著作)

書名	作者	譯者	出版社	出版年
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無參考教科書

參考教材及專業期刊導讀(尊重智慧財產權，請用正版教科書，勿非法影印他人著作)

書名

作者

譯者

出版社

出版年

無參考教材及專業期刊導讀

上課進度		分配時數(%)				
週次	教學內容	講授	示範	習作	實驗	其他
1	Stress-Strain Relationship for an Isotropic Elastic Material, Basic Equation of Elasticity for Isotropic Bodies	80	10	10	0	0
2	Vectors and Tensors del Operator, Transformation of Coordinates	80	10	10	0	0
3	Tensor operations, Quotient Law, Equations of motion Principal Stresses, stress Deviations	80	10	10	0	0
4	Displacement, Velocity, Accelement Deformation Gradient, Strain Tensors, Conpatibility of Strain Components	80	10	10	0	0
5	Equilibrium of An Elastic Body under zero Body Force, Navier ' s Equation, Applications Of the Theory Of Linear Elasticity	80	10	10	0	0
6	Scalar and Vector Potentials, Equations of Motion in terms of Displacement Potentials	80	10	10	0	0
7	Strain Potential, Harmonic Functions, Galerkin Vector	80	10	10	0	0
8	Biharmonic Function, Galerkin Vector and Neuber-Papkovich Function in Dynamics	80	10	10	0	0
9	Biharmonic Function, Galerkin Vector and Neuber-Papkovich Function in Dynamics	80	10	10	0	0
10	Plane state Stress or Strain, Airy stress Function for Two-Dimensional Problem, Airy, Stress Function in Polor Coordinates, Axially Symmetric Problem	80	10	10	0	0
11	Solution by means of Complex Variable, Cauchy-Riemann Conditions, Kolosov-Muskhelishvili method	80	10	10	0	0
12	Example : 1.Plates Bounded by two Concentric Circles and 2.Elliptic Hole in a Plate under Simple Tension (Method of Conformal Transformation)	80	10	10	0	0
13	Steady-State Response to Moving Load, Galilean transformation, Alternate Method of Solution	80	10	10	0	0
14	Viscoelastic Models, Solution by using Laplace Transformation and Inversion, Kelvin `chain and general Maxwell model	80	10	10	0	0
15	Hereditary Integrals, Correspondence Principle, Viscoelastic beams,	80	10	10	0	0
16	Vibrations-dynamic behavior for a Viscoelastic Bar under Oscillating stress, Complex Compliances, Dissipation, Relations between Compliances, Two-dimensional problems	80	10	10	0	0
17	Minimization of Functional, Ealers ' Equation, Plasticity Criteria	80	10	10	0	0
18	Final Examination	0	0	0	0	100