Theory of Elasticity

0540.5400

Semester A, 2021–22

url: http://www.eng.tau.ac.il/~harari/Courses/GradElas/

Class Tuesday 15–18

Instructor Isaac Harari

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Hours: Tuesday, 14–15 (or by appointment)

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Topics Background: mathematical preliminaries.
Kinematics: finite deformation, strain, principal strain, compatibility.
Balance laws: traction, stress, principal stress, momentum balance.
Constitutive relations: anisotropic linear elasticity, generalized Hooke's law.
Formulation: initial/boundary-value problem, virtual work, structural models.
Problem solving.
Elastodynamics.

References

Fung and Tong, *Classical and Computational Solid Mechanics*, World Scientific, 2001.
Hjelmstad, *Fundamentals of Structural Mechanics*, 2nd Ed., Springer, 2005.
Holtzapfel, *Nonlinear Solid Mechanics*, Wiley, 2000.
Lai, Rubin, and Krempl, *Introduction to Continuum Mechanics*, Butterworth-Heinemann,2010.
Langhaar, *Energy Methods in Applied Mechanics*, Wiley, 1962.
Oden, *Mechanics of Elastic Structures*, 2nd Ed., McGraw-Hill, 1981.
Timoshenko and Goodier, *Theory of Elasticity*, McGraw-Hill, 1970.

Grading

Homework problems (to final) 0%
Final 100% (10/1/2022, 14:00)