<div align="center">**Boundary Elements**</div>

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Class:
Office Hours:

Textbook: NO Textbook
Recommended Reading:

CONTENTS

1) Introduction. Boundary Elements and Finite Elements. Historical development of the BEM.
2) Preliminary Mathematical Concepts. The Gauss-Green theorem. The divergence theorem of Gauss. Green's second identity. The Dirac delta function.
3) The BEM for Potential Problems in Two Dimensions. Fundamental solution. The direct BEM for the Laplace and the Poisson equation. Transformation of the domain integrals to boundary integrals.
4) The BEM for potential problems in anisotropic bodies.
5) Numerical Implementation of the BEM. The BEM with constant boundary elements.
6) The Dual Reciprocity Method for Poisson's equation. Computer program for solving the Laplace equation with constant boundary elements.
7) Domains with multiple boundaries. The method of subdomains. Boundary Element Technology. Linear elements. Higher order elements. Near-singular integrals.
8) Applications. Torsion of non-circular bars. Deflection of elastic membranes. Bending of simply supported plates. Heat transfer problems. Fluid flow problems.
9) The BEM for Two-Dimensional Elastostatic Problems. Equations of plane elasticity. Betti's reciprocal identity. Fundamental solution. Integral representation of the solution. Boundary integral equations. Numerical solution of the boundary integral equations. Body forces.
10) Computer program for solving the plane elastostatic problem with constant boundary elements.