CE422: Finite Element Methods

Lectures: Tuesdays 6:00-8:50pm
                 41 Cooper Square, Room 504

Instructor: Adam W. Hapij, P.E.
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Prerequisites:
- CE122 –Structural Engineering II

Required Material:
    Cook, R.D., Malkus, D.S., Plesha, M.E., and Witt, R.J. Concepts and Applications of
    Finite Element Analysis. Hoboken, NJ: John Wiley & Sons, 4th ed., 2002.

Course Objectives:
- To build a solid foundation in finite element methods for linear elastic static systems.
- To develop skills in composing FEM strategies as a means of solving real world engineering problems.

Course Outline:
- Introduction
- Review of linear theory of elasticity
- Matrix structural analysis
- Strong (classical) form vs. weak (variational) form
- Rayleigh Ritz and Galerkin Method
- Finite Element Form of Rayleigh Ritz Method
    o 1D elements
    o Basic elements
- Lagrange interpolation functions
- Isoparametric elements
- Gauss Quadrature
- Special Topics

Attendance: Students are required to attend all class meetings. Some of the information and analysis techniques presented in lecture are not in the text. Grades may be adjusted for failure to attend lectures regularly.

Grading:
    A-F only. Tentative weighting:

Assignment #1	20%
Assignment #2	20%
Midterm Exam	25%
Final Exam	25%
Miscellaneous HW	10%
	100%