

**ME 872 - Finite Element Methods
Spring 2008**

Catalog Description:

Theory and application of the finite element method to the solution of continuum type problems in heat transfer, fluid mechanics, and stress analysis.

Instructor Prof. A. Díaz
2440 EB 353-0825
Office Hours Tu Th 10:00 – 11:00 + by appt
Lecture MWF 3:00-3:50 2205 EB

TEXTBOOK (suggested ONLY. Class notes will be available) Reddy, An Introduction to the Finite Element Method. 3d Edition

WEB PAGE www.egr.msu.edu/~diaz/

Topics	Ref. (selected sections)
Integral formulations and variational methods	Ch 2
Second order boundary value problems (1D)	Ch 3,4
Heat conduction problem in 2D: constant strain triangle	Ch 8
Computational implementation	Ch 7
Isoparametric elements	Ch 9
Numerical integration	Ch 7,9
Beam elements	Ch 5
Solution of elasticity equations using finite elements	Ch 11
Eigenvalue problems	Ch 6
Time dependent problems	Ch 6
Special topics: Lagrange multipliers, adaptive finite elements	various

Grading

H	Homework	20 %	Only some (randomly selected) problems will be graded
E1	Exam 1	30 %	
E2	Exam 2	30 %	
P	Term project	20 %	

- Each graded item (H, E1, E2, P) will be assigned a grade in range [0.0 - 4.0]
- Course grade = $0.20*H + 0.3*E1 + 0.3*E2 + 0.20*P$ rounded (up or down) to the nearest “university scale” grade in set {0.0, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0}

TO RECEIVE A PASSING GRADE STUDENTS MUST BE AVAILABLE DURING
THE FINAL EXAM HOUR ASSIGNED TO THIS COURSE:

Wednesday April 30, 2008, 3:00 to 5:00 pm