2003/8/25

AE 722
Finite Element Analysis of Structures I
SEC 22255- 4:10 P.M. - 5:25 P.M. MW - 210 WH
FALL 2003

Instructor:	**Jeff Dietiker, Ph.D.**
Office:	**207 Wallace Hall**
Office Hours:	**3:00 - 4:00 PM MW, or by appointment**
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Text: **Reddy, J.N, An Introduction to the Finite Element Method, 2nd Edition, McGraw-Hill.**

Prerequisite: **AE 625 or equivalent or instructor's consent.**

Course Description: Advanced treatment of the theoretical concepts and principles necessary for the application of the finite element method in the solution of differential equations in engineering.

Grading policy:

2 Exams (25% each)	50%
Homework / Quizzes	25%
Final Exam	25%

The final grade will be based on a 100-point system (i.e., A = 90-100%, B = 80-89%, C = 70-79%, D = 60-69%, F = 59% and below).

Comments on MathCAD Printout.

Homework policy:

Homeworks will be assigned on a regular basis and the due date will be announced in class. Each homework will be collected at the beginning of the class on the due date. No late homework will be accepted. The following requirements apply to the homework format:

1. All assignments should be completed on a 8.5×11 in paper, **on one side only**.
2. Every new problem should be started on a new page.
3. Your name should be written on each page.
4. All work should be neat and organized.
5. Appropriate comments and description of the procedure must be included.
6. All answers should be underlined or boxed.
7. Answers without a procedure will not be graded.
8. Unless specifically stated, all work is assumed to be performed individually. Cheating of any kind will result in the grade F in the class and "may result in further discipline at the college or university level" (WSU Student Handbook).

The instructor reserves the right to refuse homeworks that do not meet these guidelines

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Tentative Course Topics	Chapters
1. Integral formulation and variational methods Weak formulation of the boundary value problems Variational methods of approximations	2
2. Finite Element Analysis (FEA) of One-Dimensional Problems Basic steps of (FEA) Applications: heat transfer, fluid mechanics, solid mechanics, bending of beams	3,4
3. Finite Element Error Analysis	5
4. Numerical Integration and Computer implementation Isoparametric formulation Computer implementation	7
5. FEA of two-Dimensional Problems Interpolation functions Numerical Integration Mesh Generation Applications: heat transfer, fluid mechanics, solid mechanics, and plane elasticity	8,9,10