



Course Syllabus: CMGP 08 Finite Element Method I

Instructors: Dr. H. Smaoui, Dr. M. Neifar, Dr. B. Zouari

Course Outline:

1. Overview
2. Integral formulation and variational methods
3. Finite element analysis of one-dimensional problems
4. Finite element analysis of two-dimensional problems
5. Plane elasticity
6. Isoparametric elements
7. Bending of elastic plates
8. Characterization of nonlinear behavior
9. Formulation of plasticity models.
10. Nonlinear finite element formulation and implementation

Course Offering: Quarter 1 of each academic year (Required Course; 45 hours total; 4.5 Credit hours)

Course Grade: Homework (30%); Exam (70%)

References:

- Bathe, K.J., "Finite Element Procedures", Prentice Hall, 1995.
- Cook, R.D. Malkus, D.S., Plesha, M.E., Witt, R.J., "Concepts and Applications of Finite Element Analysis (4th Ed.)", Wiley, 2001.
- Kwon, Y.W., Bang, H., "The Finite Element Method using Matlab, 2nd Edition", CRC Press, 2000
- Hughes, J.R. "The Finite Element Method, Linear Static and Dynamic Finite Element Analysis", Dover Publications, 2000
- Reddy, J.N., "Introduction to the Finite Element Method, 2nd Edition", McGraw Hill, 1993.
- Zienkiewicz, O.C., Taylor, R.L., "The Finite Element Method, Volume 1, The Basics, 5th Edition", Butterworth-Heinman, 2000
- Zienkiewicz, O.C., Taylor, R.L., "The Finite Element Method, Volume 2, Solid Mechanics, 5th Edition", Butterworth-Heinman, 2000