Instructor: Dr. F. Necati Çatba (ENG-II 406, 407-823-3743, catbas@mail.ucf.edu, http://people.cecs.ucf.edu/catbas/)

Course Location and Times: BA 216, Monday and Wednesday (12:00 PM - 1:15 PM)
Office Hours: Monday and Wednesday (2:30 PM - 5:00 PM) or by appointment. Please do not e-mail unless it is necessary.

Course Objective: This course aims to introduce the structural analysis methods that are commonly and currently used in practice and in research. Upon completion of the course, the students will be able to:
1) Enhance structural analysis understanding and knowledge
2) Understand the physical meaning of element and system matrix-based stiffness approaches
3) Develop skills in idealizing and modeling structures, then computing the member forces and deformations for determinate and indeterminate structures in 2D as well as in 3D
4) Gain knowledge of software tools for a (structural) engineer for computer based applications
5) Develop skills to interpret the solutions from hand calculations, self-written programs and commercial structural analysis software

Pre-requisites: Structural analysis, general knowledge of matrix algebra, mechanics of materials, working knowledge of structural analysis software, a math software or consent of the instructor.

Instructor’s Course Notes and Hand-outs

Additional References:

Grading Policy:
- Exam 1: 25% (March 7, 2007)
- Exam 2: 25% (April 16, 2007)
- Final Project: 35% (TBA)
- Homework: 15%

Grading Standards and Letter Grades: Homework and projects, exam papers should be prepared in a professional format, clearly explaining the assumptions, solution methods and the results with clear sketches/figures. In ALL cases, steps of the solution must be clearly shown with all final answers boxed or underlined. Loose papers must be properly stapled together. Self-written computer programs should include detailed documentation for following the procedures and the implementation. Structural analysis software solutions should be processed (not just the output files), tabulated and presented with the necessary documentation and output files. Any missed or late work, missed exam will not be made up unless an emergency or unavoidable cause can be identified and approved by the instructor. UCF Golden Rules will be followed for academic integrity. Letter grades (with +/-) will be given based on final averages.

Course Highlights:
- Introduction and Overview of Structural Analysis
- Plane Trusses and Beams
- Plane Frames
- Member Releases and Secondary Effects
- 3D Framed Structures
- Introduction to Finite Element Analysis and Special Topics and Modeling Techniques
- Modeling Errors and Accuracy
- Commercial Structural Analysis Software (SAP2000)
- Solution Techniques, Evaluation and Presentation of Engineering Problems