Advanced Structural Analysis I – Classical and Matrix Methods

Instructor  
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Classes  
Lectures: MTWR, 1st Period (Weil 279)

Office Hrs  
Weil Hall – Room 204-D, Mon., Tues., Wed., Fri. 4th Period (10:40am – 11:30am) and by appointment.

Course Web Site  
The course web site is located at: www.ce.ufl.edu/~grc (follow link for CES 6106). Students must know how to use a web browser. Spreadsheets, software, and other information will be posted on the web page during the semester.

Textbooks  
None required. Lectures and handouts will cover all necessary information. Each student is responsible for obtaining lecture notes and handouts for classes that are missed. Instructor’s lecture notes will not be loaned out.

Software  
MathCad and structural analysis software (to be announced) will be used in this course. Students are required to know or learn how to use MathCad. An introduction to its use will be presented during the semester and example problems worked out using MathCad will be distributed to the students. Both the basic computational features of MathCad as well as the program-function features will be used. If you are new to MathCad, it would be advisable to start exploring the program immediately. MathCad is available in the Civil Engineering PC lab.

Grading  
The grading scale for this course is as follows.

<table>
<thead>
<tr>
<th>Grade</th>
<th>Components</th>
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<tbody>
<tr>
<td>A</td>
<td>Homework 20 %</td>
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<tr>
<td>B</td>
<td>Exam 1 20 %</td>
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<tr>
<td>C</td>
<td>Exam 2 20 %</td>
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<tr>
<td>D</td>
<td>Exam 3 20 %</td>
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<tr>
<td>E</td>
<td>Final Exam 20 %</td>
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Homework  
All homework must be submitted with clear and neat calculations and neat sketches. Sloppy, disorganized homework will not be graded. Homework will be accepted late at a penalty of 30% per day unless there is a valid excuse. Exceptions to this rule include cases where the student has spoken to the instructor prior to the due date of the homework or cases where there is a valid excuse (e.g. medical emergency with written proof). Not all homework problems will be graded. The problems that are graded will be selected at random from the assigned problems.

Course Outline (topics not necessarily covered in the order shown)

- MathCad
- Statics review, classical beam theory review
- Moment area
- Indeterminate structures
- Slope deflection
- Virtual work
- Rayleigh-Ritz method
- Moment distribution
- Linear algebra
- Flexibility method
- Intuitive stiffness method
- Direct stiffness method
- Special topics (as time permits): Temperature effects, shear deformations, eccentricities, constraints, P-Δ system, buckling, condensation, substructuring, introduction to nonlinear problems