

**ASEN 5007 Introduction to Finite Element Methods Fall 2009**  
**Homework Assignment #6 (short): Chapters 15 and 16**

Due Thursday October 22, 2009 (October 29 for CAETE students)

*Please attach this cover sheet to your returned homework and write your name(s) on it*

Three Exercises in Chapters 15 and 16:

15.3 or 15.4 (pick one; manipulations useful for Exam 2 problems)

15.5 (easy)

16.4 (preparation for the shape function concept)

Grading weights posted at the start of the Exercises.

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**Notes:**

For 15.3 check that (15.26) is recovered if the body forces and thicknesses are constant over the element. The result of 15.4 may be checked by making both force components constant over the side; if so the EbE result (one half of the total load goes to each corner) should be recovered.

Ex. 15.5 may be done by hand or using code such as that of Figure 15.6. As a check, 3 eigenvalues of  $\mathbf{K}^{(e)}$  should be zero within double-precision floating-point accuracy. (If using *Mathematica*, tiny floating-point values may be set to zero using the Chop command so the printout looks cleaner.)