

**ASEN 5007   Introduction to Finite Element Methods   Fall 2013   CAETE Offering**  
**Homework Assignment #6: Chapters 15 and 16**

Due Thursday October 24, 2013 for on-campus students; October 31 for CAETE students

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

Four Exercises from Chapters 15 and 16:

15.3

15.4

15.5 (easy)

16.4 (preparation for the isoparametric shape function concept further developed in Ch 18)

Grading weights posted at the start of the Exercises.

---

**Notes:**

For 15.3 check whether (15.26) is recovered if the body forces and thicknesses are constant over the element. The result of 15.4 may be verified 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 — *Matlab* would also be fine since the computation is numeric. 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.)