CE 203 STRUCTURAL MECHANICS I

Second Semester 1433 / 2012 (**112**)

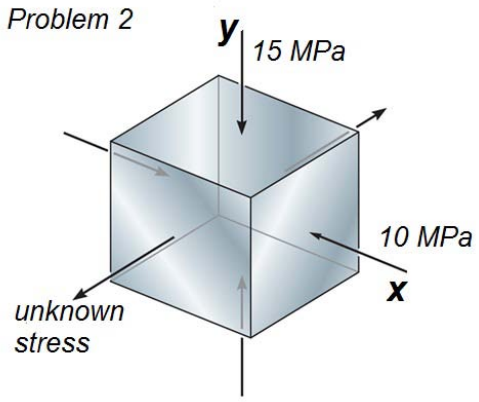
HOMEWORK NO. 6

- **Textbook Sections Covered:** 1.3 & 10.6 - Generalized Hooke's Law
- **DUE DATE**: **Monday 12-March-2012**

---

1 - Use the figure and description of P**roblem 10-57 in the textbook**. The initial dimensions of the rubber block are *100X100X100 mm*. Determine the stress in each of the 3 main axes (x, y, and z) , and calculate the final volume of the block. ($P = 20\ kN$, $E = 5\ MPa$, $\upsilon = 0.25$)

2 - Determine the magnitude of the stress in the z-direction that should be applied if we want the volume of the block to remain unchanged. Use $E = 50\ MPa$, $\upsilon = 0.2$ (*Hint : You may use the dilatation formula, page 510*).



3 – The block is subjected to the shown stresses and is free to displace in the z-direction. The initial dimensions are : $a = 500mm$, $b = 100\ mm$, $t = 80\ mm$. Determine the final dimensions of the block , and the final volume of the block. Use $E = 100\ MPa$, $\upsilon = 0.2$