

# Welcome to Physics 4B

Reminders 8-23-10:

**-ADDS AFTER CLASS OR IN LAB; Maximum number of students in Tuesday section can only be 18 due to room restrictions!!!**

**-Read Syllabus**

**Log onto Webassign ASAP, class key sierracollege 8976 1386**

**-Log onto Computers**

**-Read Syllabus**

**-POW 1 due Monday August 30.**

**-Lab software can be obtained from desktop of computers in lab.**

**-Check course web page will migrate to Blackboard soon.**

**-If you did not have Physics 4A at Sierra College, you must stop by office at your earliest convenience to discuss how labs are done here!!!**

**-Course prerequisite Physics 4A AND Math 31; 1st exam will DEFINITELY have several problems involving Math 31 topics. If you are missing either of these prerequisite you'll probably get smoked on the first exam.**

**-Sign up for Physics 4Y. Homework will be discussed in this class.**

**Objectives:**

**-Charges**

**-Coulomb's Law**

physics.stierracollege.edu

↳ Courses

↳ Physics 4B

$$\hat{r}_1 = \cos 60^\circ \hat{i} + \sin 60^\circ \hat{j}$$

$$\hat{r}_2 = \cos 60^\circ \hat{i} - \sin 60^\circ \hat{j}$$



$$|\vec{F}_1| = \frac{k(7\mu\text{C})(2\mu\text{C}) \times 10^{-12}}{(0.5\text{m})^2} = 0.504\text{N}$$

$$|\vec{F}_2| = \frac{k(7\mu\text{C})(4\mu\text{C}) \times 10^{-12}}{(0.5)^2} = 1.01\text{N}$$

$$\sum F_x = F_1 \cos 60 + F_2 \cos 60 = 0.756\text{N}$$

$$\sum F_y = F_1 \sin 60 - F_2 \sin 60 = -0.438\text{N}$$

$$\vec{F} = (0.756\hat{i} - 0.438\hat{j})\text{N}$$

$$|\vec{F}| = 0.873 \text{ @ } 330^\circ$$

$$\theta = \tan^{-1} \left( \frac{-0.438}{0.756} \right)$$

## Method 2

$$\vec{F} = \frac{k q_1 q_2}{r^2} \hat{r} \quad \hat{r} \text{ is unit vector that points from source to test charge}$$

$$\vec{F}_1 = \frac{k (2 \mu\text{C}) (7 \mu\text{C}) (10^{-12})}{(0.500 \text{ m})^2} [\cos 60^\circ \hat{i} + \sin 60^\circ \hat{j}]$$

$$\vec{F}_2 = \frac{k (-4 \mu\text{C}) (7 \mu\text{C}) (10^{-12})}{(0.500 \text{ m})^2} [-\cos 60^\circ \hat{i} + \sin 60^\circ \hat{j}]$$

$$\vec{F} = \vec{F}_1 + \vec{F}_2 = [0.756 \hat{i} - 0.436 \hat{j}] \text{ N}$$

Same as above