Physics 201 Spring 2018 Day 1

Text: openStax.org
University Physics Volume 2
we begin Section 5 Electricity
through Section 16 Maxwell's Equations
and EM waves.
Then Thermal Physics (Note).

Grading:
Quiz 15%
Homework 20%
Lab 10%
Exams: 55% 3 exams equal weight
in lab on Friday at end of weeks: 5, 10, 15.

Friday Feb 23
Apr 6
May 11th

Generally, not culmative

Review in lab 1 week prior.
Equ. sheet provided.
Quiz: Minimum of 3: 1 prior to each exam.

online homework system: masteringphysics.com
Course ID: "CIPHYS201 SPR 2018"

Other P201 Section:
MW Noon - 1:15pm labs: 9AM-Noon Mon & Wed.

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Office Hours:
Mon, Wed 4:05 - 5:15 pm
Th 3-4pm and by appointment.

Electricity: 1st: Electro-statics
↑ no moving charge

Charge

+	−	uncharged
protons	electrons	nutrons

symbol for charge is q, Q
and the charge is measured in unit called Coulomb (C)

the charge on an electron $= -e$

$e = 1.6 \times 10^{-19}$ C

proton charge $= e = +1.6 \times 10^{-19}$ C

$$F_E = k \frac{Q_1 Q_2}{r^2}$$

$$k = 9.0 \times 10^9 \frac{N m^2}{C^2} \qquad k = \frac{1}{4\pi \epsilon_0}$$

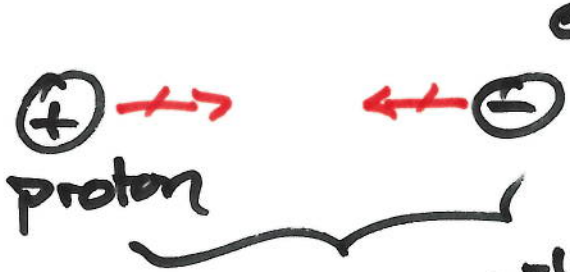
permittivity of free space $= \epsilon_0 = \varepsilon_0$

$$= 8.85 \times 10^{-12} \frac{C^2}{N m^2}$$

Compare with Gravity:

$$F_G = G \frac{m_1 m_2}{r^2} \qquad G = 6.67 \times 10^{-11} \frac{N m^2}{kg^2}$$

In atom



find F between proton & electron.

$$F = k \frac{|q_1 q_2|}{r^2} = 9. \times 10^9 \frac{N m^2}{C^2} \times \frac{(1.6 \times 10^{-19} C)^2}{(10^{-10} m)^2}$$

$F = 2.3 \times 10^{-8} N$