

Physics 102

1-1

Lecture 1. Wed. Sept. 8, 2004. ~~Sept. 8~~

• Instructor: Dr. Michael CHEN

- <http://www.sfu.ca/~mxchen/>

- Click on "physics 102" for the course webpage

- email: mxchen@sfu.ca.

(for emergencies only)

- Office hours: MWF 10:30 - 12:00

(P9442) OR by appointment.

(P8482)

• Textbook: Physics by James S. Walker

1st OR 2nd edition.

• Exam Dates: Midterm #1. Friday Oct. 15. 9:30 - 10:20

Midterm #2: Friday Nov. 19, 9:30 - 10:20

Final Exam: Sat. Dec. 11, 8:30 - 11:30 AM.

• Grading : The best of ①. ②. ③. ④

①. Assignments : 10% (CAPA + hand written)

Midterms : 40% (2 x 20%)

Final Exam: 50%

②. Assignments : 10%

Midterm : 20% (the best of midterm #1 and #2)

Final Exam: 70%

③. Assignments : 10%

Final Exam: 90%

④. Final Exam: 100%

Note : You have to write the exams (midterms and final) unless you have a doctor's note or something in writing.

• Open labs : (Tutorial)

(NOT mandatory)

Wed. Thur. 13:30 - 17:20 AQ 2104

• Exams : No cheating !

closed book. No formula sheet !

- Main Topics in this course

1. Electricity and Magnetism

2. Optics and Waves

3. Modern physics.

Electrostatics (ch 19-20)

1-4

— electric charges at rest

- Electric charge is one of the fundamental properties of matter (can not be explained by say mechanics).
- How was electric charge discovered?

One version of the stories: (Demo)

When a piece of amber was rubbed against animal fur, it attracted small, lightweight objects.

— The amber rod is charged.

(It has electric charges on it.)

If glass is rubbed with a piece of silk, it can attract small objects as well.

— The glass rod is also charged.

However, the rubbed glass and amber have different types of charges.

- Two types of electric charges

Benjamin Franklin's definition (1747)

Negative charge (-) : The charge on amber when rubbed with fur .

positive charge (+) : The charge on glass when rubbed with silk .

- Quantization of electric charge .

Smallest charge discovered : $e = 1.60 \times 10^{-19}$ Coulomb .

An electron has negative charge , $-e$. (\ominus)

A proton has positive charge , e . (\oplus)

A neutron has no electric charge .

An atom is composed of electrons , protons and neutrons .

e.g: Li atom .

