PHY 1122 – Fundamentals of Physics II
Spring, 2020 (Full session A – Lectures May 4 to July 24)

Course website available on Brightspace:
https://uottawa.brightspace.com/d2l/home

Course lecturer:
Dr. Michael Wong
Department of Physics, University of Ottawa
Email: mwong@uottawa.ca
Office: STM 368
Telephone: (613) 562-5800 × 2323

Schedule:

Lectures	Office Hours	Discussion group	Labs
Tue 10:00 – 11:20 am **Thu** 8:30 – 9:50 am I will be available during lecture times on Adobe Connect.	By appointment: **Send me an email to schedule an appointment.** Use Microsoft Teams	**Fri** 1:00 – 2:20 pm TA: Pedram Abdolghader	Check Brightspace Lab website for more information

Evaluation:

Quizzes	Assignments	Labs	Midterm 1	Midterm 2	Final
10%	10%	20%	15%	15%	30%

Quizzes (online):
- About once per week (during a lecture time) there will be an online quiz with a duration of ~10 minutes where you solve one or two problems (selected from a short list made available 5-7 days in advance).
- The quiz will be available in Brightspace where you open the file and submit your answers online.

Assignments (online):
- There will be five assignments throughout the semester and each one will have ~10 questions (mix of multiple choice, written answer, multi-select, true/false, etc…).
- The assignments will be online in Brightspace where you open the file and submit your answers online.

Midterm exams – dates:
Monday, June 2, 2020 (10:00 – 11:20 am)
Saturday, July 4, 2020 (10:00 – 11:20 am)
- The midterm exams will be an open-book evaluations online in Brightspace. More details to follow.
- If you are unable to write a midterm with proper justification then you must write a make-up midterm exam (date **TBD**).

Final exam – date: TBD (exam period is July 27 – 31):
- The final exam will be an open-book evaluation. Details to follow.
- If you are unable to write the final exam with proper justification then you may write a deferred exam during the period Oct. 25 – 31, 2020.
- **Note**: There is no supplemental exam for Faculty of Science courses.

Teaching assistant:

- Pedram Abdolghader (pabdo022@utotawa.ca) will be in charge of DGD sessions and some corrections.

Course materials:

Textbook: Young and Freedman, *University Physics (with Modern Physics)*, 14th Edition

- New copies can be purchased from Campus Bookstore (https://www.bkstr.com/ottawastore/home).
- It is fine to use an older edition (or online edition) of the text as long as you realize the problem numbers may be different.
- **I will post all lecture notes, quiz questions, and review materials on Brightspace.**

Course outline and topics:

Heat and thermodynamics. Hydrostatics and hydrodynamics. Geometrical optics. Wave theory, Physical optics. Electrostatics. Direct current circuits. A second course intended primarily for students in the physical sciences and engineering. A familiarity with vector algebra and some understanding of calculus is assumed.

0) Intro and review of basic mechanics (1 lecture)

1) Electrostatics (Ch. 21, 23 – 26, ~7 lectures)

- Electric charge, force, and field, Coulomb's law.
- Electric potential and energy.
- Capacitance and dielectrics, current and resistance, electromotive force.
- DC Circuits, Kirchhoff's rules.

2) Thermodynamics (Ch. 17 – 20, ~6 lectures)

- Temperature, heat, phase changes.
- State equations, thermal properties and phases of matter, heat capacities.
- Laws of thermodynamics, ideal gases, energies and processes, entropy.

3) Fluid mechanics (Ch. 12, ~2 lectures)

- Density, pressure, buoyancy, fluid flow, Bernoulli's equations, turbulence.

4) Optics (Ch. 33 – 36, ~7 lectures)

- Particle nature of light, ray optics, reflection/refraction/dispersion, lenses.
- Wave nature of light, interference, diffraction and applications.

Grades:

Letter Grade	Percentage Scale
A+	$90 \leq G < 100$
A	$85 \leq G < 90$
A-	$80 \leq G < 85$
B+	$75 \leq G < 80$
B	$70 \leq G < 75$
C+	$65 \leq G < 70$
C	$60 \leq G < 65$
D+	$55 \leq G < 60$
D	$50 \leq G < 55$
E	$40 \leq G < 50$
F	$0 \leq G < 40$

Laboratory component of 1st year physics course (Spring, 2020)

The lab component will study measurements and a few different classical physics experiments. The focus of the lab assignments will be on data analysis, manipulation, and presentation (creating tables/graphs) as well as answering questions and drawing conclusions based on your results. You will also be solving some theoretical problems related to the experiment.

Website:

- Website is accessed via virtual campus (**Brightspace**):
https://uottawa.brightspace.com/d2l/home
- All lab manuals, pre-lab tests, and lab assignments will be on the Brightspace website.
- **NOTE**: Your Brightspace lecture and LAB websites are separate!

Schedules:

- In Brightspace under schedule – please read carefully! **Lab due dates are every 2nd week!**
- The **first lab** will be the week of May 25 – 29, 2020.
- Each lab assignment will have a 3 hour time limit to complete so give yourself ample amount of time to work on it before you open the file.

Evaluation:

- The laboratory component is worth 20% of your physics course grade.
- There are 5 experiments and the distribution of marks is in Brightspace under "Grade dist."

Contact:

Dr. Michael Wong
Undergraduate lecturer and lab coordinator (1st year)
Office: STM 368
Phone: (613) 562-5800 × 2323
Email: phylab@uottawa.ca (for general lab questions/problems)
Email: mwong@uottawa.ca (for problems with Brightspace, missed lab evaluations, or academic accommodations, etc…)