

PHY 1122 - 01 Principles of Physics 2

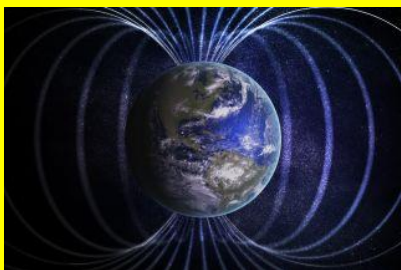
Bermuda College

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Course Description and Objectives

Principles of Physics II is a course in the fundamental principles and applications of physics. Topics include fluids, thermal physics, electricity, magnetism, optics and nuclear physics. Suitable for students intending to pursue other scientific studies or engineering.

At the conclusion of the course, students will be able to:

- Understand why objects either float or sink in water and why aircraft can fly.
- Understand the concept of specific heat capacity and its importance in weather and climate.
- Know and explain how a gas behaves when the temperature, pressure and/or volume is changed.
- Understand how to interpret a pressure-volume graph and calculate the work done by a heat engine.
- Understand the basic concepts of voltage, current and resistance in an electrical circuit and be able to calculate the currents in a given circuit.
- Be able to draw the magnetic field around a magnet and the Earth.
- Be able to construct an electromagnet.
- Understand the concept of the motor effect and know its practical uses.
- Understand the concept of electromagnetic induction and how it is used to generate electricity.
- Be able to calculate the angle of refraction when light passes from one medium to another.
- To understand how lenses work and be able to calculate the focal length of a lens using a candle.
- Understand the role of nuclear physics in medicine and generating electricity.
- To understand the role of electricity generation in our world and how we can use alternative energy resources to reduce the impact on our environment.
- Apply the theories and concepts learned during the course to explain physical phenomenon and solve problems.
- Perform scientific experiments and analyse data.

Grading Scheme

Assignments	20%
Lab work and notebook	30%
Attendance and Participation	20%
Exam	30%

Grade	Percentage	Grade Point
A	94 – 100	4.00
A-	90 – 93	3.67
B+	87 – 89	3.33
B	84 – 86	3.00
B-	80 – 83	2.67
C+	77 – 79	2.33
C	74 – 76	2.00
C-	70 – 73	1.67
D	60 – 69	1.00
F	< 60	0.00

Course and Lab Schedule

Week	Date	Day	Chapter and Lab Readings	Assignments/Labs Due
1	18 Jan	MON	Hydrostatics	
	22 Jan	FRI	LAB 1 – Archimedes' Principle	
2	25 Jan	MON	Hydrodynamics	Assignment 1 + Lab 1
	29 Jan	FRI	LAB 2 – Torricelli's Theorem	
3	1 Feb	MON	Heat Transfer and Heat Capacity	Assignment 2 + Lab 2
	5 Feb	FRI	LAB 3 – Specific Heat Capacity	
4	8 Feb	MON	Gas Laws	Assignment 3 + Lab 3
	12 Feb	FRI	LAB 4 – Pressure law	
5	15 Feb	MON	Thermodynamics	Assignment 4 + Lab 4
	19 Feb	FRI	LAB 5 – Boyle's and Charles' Laws	
6	22 Feb	MON	Electric Voltage and Current	Assignment 5 + Lab 5
	26 Feb	FRI	LAB 6 – Resistance of a Wire	
7	1 Mar	MON	Kirchhoff's Laws	Assignment 6 + Lab 6
	5 Mar	FRI	LAB 7 – Series and Parallel Circuits	
8	8 Mar	MON	Mid-term break	
	12 Mar	FRI	Mid-term break	
9	15 Mar	MON	Magnets and Electromagnets	Assignment 7 + Lab 7
	19 Mar	FRI	LAB 8 – Electromagnets	
10	22 Mar	MON	Motor and Dynamo Effects	Assignment 8 + Lab 8
	26 Mar	FRI	LAB 9 – Motor Effect	
11	29 Mar	MON	Reflection and Refraction of Light	Assignment 9 + Lab 9
	2 Apr	FRI	LAB 10 – Refraction	
12	5 Apr	MON	Optics (mirrors and lenses)	Assignment 10 + Lab 10
	9 Apr	FRI	LAB 11 – Focal length of a lens	
13	12 Apr	MON	Atoms and Nuclei	Assignment 11 + Lab 11
	16 Apr	FRI	LAB 12 – Modelling decay	
14	19 Apr	MON	Nuclear Fission and Fusion	Assignment 12 + Lab 12
	23 Apr	FRI	LAB 13 – group problem solving	
15	26 Apr	MON	Revision session	Assignment 13 + Lab 13
16	3 May	MON	EXAM	

I may be off-island for the school's Easter break (29 Mar - 5 April), we can make up the lecture(s) either side – to be determined by the administration/students.

The solutions to the assignments and labs (if appropriate) will be published at 12 pm on the due date. For assignments to be graded they must be uploaded to Moodle before this deadline.

Office hours – please email me to arrange a zoom meeting.