UNIVERSITY OF CAPE TOWN: DEPARTMENT OF PHYSICS

PHY1032F: GENERAL PHYSICS B (2023)

Description: PHY1032F is an algebra-based introductory course for Science students who do not intend proceeding to second-year courses in Physics. Some calculus may be used.

Lecturers:

Electromagnetism:	Prof. David Wolfe	dwolfe@unm.edu / RW James 4.T6
Modern Physics :	Prof. Heribert Weigert	heribert.weigert@uct.ac.za / RW James 4.09
Optics :	Dr Mawande Lushozi (**convenor**)	mawande.lushozi@uct.ac.za / RW James 4.11
Thermal Physics:	Dr Trisha Salagaram	trisha.salagaram@uct.ac.za / RW James 5.13
Course Tutor:	Miles Kidson	KDSMIL001@myuct.ac.za

Prerequisite: PHY1023H or PHY1031F passed

Prescribed Textbook: College Physics (Openstax). A copy of the textbook is available on the Vula page under Resources/-Textbook.

Course outline:

Electromagnetism: Electric Charge, Electric Field, Gauss's Law, Electric Potential, Capacitance, Current, Current Density, EMF, Resistance, Resistivity, Networks, Magnetic Field, Biot-Savart Law, Ampere's Law, EMI, Inductance, Alternating Current, Electromagnetic Waves

Optics: Geometrical Optics, Polarisation, Electromagnetic Waves, Interference, Diffraction

Thermal Physics: Temperature, Heat, Kinetic Theory of Gases, 1st and 2nd Laws of Thermodynamics

Modern Physics: Atomic Structure, Quantum Physical Phenomena, Wave-Particle Duality, X-Rays, Elementary Nuclear Physics, Radioactivity

Lectures: 3rd Period Monday-Friday (10h00-10h45) in RW James LT 4B. *See the lecture timetable on the next page.*

Laboratories: 14h00-17h00 on Wednesdays in RW James PHYLAB I. All students are expected to attend all practical laboratories for the course, and complete all laboratory reports, other homework laboratory assignments, and laboratory tests (where applicable). A minimum of 50% for your overall laboratory grade is required for a DP.

Tutorials: Alternate with practicals on Wednesday afternoons. Problems will be solved in groups of 3 on the whiteboards in PHYLAB I (upstairs). All students are expected to attend all white board tutorials for the course. Grade will be given for tutorial attendance which will be folded into the overall course grade.

Homework: All students are expected to hand in all homework for the course which will be graded and returned. A grade will be given for homework which will be folded into the overall course grade.

Assessment: PHY1032F is assessed as follows

2	class tests	25%
1	lab test	10%
12	weekly problem sets (homework)	5%
5	lab reports	10%
1	June exam (2 hours)	50%

Duly Performed (DP) requirements: A student will be regarded as having duly performed the work of the course, and thus qualify to write the final examination, if they have met the DP requirements for this course.

1. A minimum of 35% overall for the class record of the course. (as determined one week before the last teaching day of the course). The DP list will be published no later than one calendar week before the last teaching day of the course, and all grades recorded by that day will be used to consider the DP status of each student. Grades recorded after this date will be used in cases of appeal when a DP is not awarded.
2. Attendance at all class tests. Students missing a test for medical reasons will be required to write a make-up within three days of returning to classes, in consultation with the course convener.
3. A minimum of 50% for the laboratory component of the course.

DP certificates may be withheld from students who fail to meet these minimum requirements. Students who are not awarded DP certificates will not be permitted to write the final examination. An appeal against a DP not being awarded is first made to the course convener, and thereafter potentially to the Head of Department (by email).

UCT Department of Physics: PHY1032F Lecture schedule 2023

Week	Date	Mon	Tue	Wed	Thu	Fri
1	Feb 13-17	EM	EM	EM	EM	EM
2	Feb 20-24	EM	EM	EM **Multimeter**	EM	EM
3	Feb 27- Mar 3	EM	EM	EM **Tut1**	EM	EM
4	Mar 6-10	EM	EM	EM **Ohm**	EM	EM
5	Mar 13-17	EM	EM	EM **Tut2**	EM **Test 1**	EM
6	Mar 20-24	EM	**Human Rights Day**	EM **Oscilloscope**	EM	EM
7	27-31 Mar	**Vacation**	**Vacation**	**Vacation**	**Vacation**	**Vacation**
8	Apr 3-7	MP	MP	MP **Tut3**	MP	**Good Friday**
9	Apr 10-14	**Family Day**	MP	MP **Boyle's Law**	MP	MP
10	Apr 17-21	MP	MP	MP **Tut4**	MP	Opt
11	Apr 24-28	Opt	Opt	Opt **Normal Distribution**	**Freedom Day**	Opt
12	May 1-5	**Worker's Day**	Opt	Opt **Tut5**	TP **Test 2**	TP
13	8-12 May	TP	TP	TP **Lab Test**	TP	TP
14	May 15-19	TP	TP	TP **Tut6**	TP	TP
15	May 22-26	Consolidation	Consolidation	Consolidation	Consolidation	Consolidation
		Exams	...	then	...	vacation

Lectures

EM: Electromagnetism (David Wolfe)

MP: Modern Physics (Heribert Weigert)

Opt: Optics (Mawande Lushozi)

TP: Thermal Physics (Trisha Salagaram)

Class Tests

Thursday, 16 March 2023, 18h00-19h00

Thursday, 4 May 2023, 18h00-19h00