

UNIVERSITY OF CAPE TOWN: DEPARTMENT OF PHYSICS
PHY2010S COURSE INFORMATION SHEET (2020)

Description: PHY2010S is second semester course which aims to teach concepts of electromagnetism and semiconductors to a second year undergraduate level within an engineering context.

As a consequence of UCT's emergency response to the COVID-19 pandemic, all lectures and laboratories will take place in remote learning mode for the second semester. All assessments will be of a "continuous" nature. There will be final examination in November. All assessments will be graded both for DP purposes and for you to receive feedback on your progress and performance. Students who have met the DP requirements and who achieve an aggregate of 50% or greater will be given a final grade code of "Pass". There will be no final grade beyond the codes "Pass" or "Fail". This is in accordance with the overarching decision made by UCT for S courses in 2020.

Lecturers	Email	Topic
Dr Tom Leadbeater	tom.leadbeater@uct.ac.za	Electrodynamics
Dr James Keaveney	james.keaveney@uct.ac.za	Magnetism
Dr Trisha Salagaram (convenor)	trisha.salagaram@uct.ac.za	Semiconductor Physics

Course tutors

Mr Ali Elimam	elmali001@uct.ac.za
Mr Linda Shelembe	shllin007@myuct.ac.za

Online tutoring using Vula Chat rooms:

Tutors will be available to answer questions posted in the chat room daily. Times will be announced.

Prescribed Textbook: D.J. Griffiths, *Introduction to Electrodynamics*, 3rd or 4th edition Pearson / Prentice-Hall. Essential materials will be made available on Vula.

Course outline:

Electrodynamics:	Vector calculus (div, grad, and curl), Dirac delta functions. Coulombs law, Gauss law, Poissons & Laplaces equations, electric fields in matter, Ohms law, currents, circuits
Magnetism:	Magnetic fields in matter, Biot-Savart law, Amperes law, electromagnetic induction, Poyntings theorem, electromagnetic waves in vacuum
Semiconductor Physics:	Crystal structures, energy quantisation, bond model and band model, charge carriers, the p-n junction

Lectures: All lectures will be online through Vula, making use of voice-over-slides and other supplementary materials. See the remote teaching schedule on the next page.

Laboratories: The laboratory component of the course will be in a "do-at-home" format. There is a separate document dealing with the lab course.

Homework: Weekly homework problem sets (WPS) will be presented every **Friday** as a Vula quiz. You will receive feedback after you complete and submit your answers. Late submissions will be accepted at the discretion of the lecturer in charge.

Assessment: Assessments and their weighting are shown in the table below. A grade of 50% is required to pass the course, and is given by the sum of the weighted scores for each assessment.

Number	Assessment	Weighting
3	Class tests	30%
3	Lab reports	20%
10	WPS	15%
1	Nov exam	35%

Duly Performed (DP) requirements: To be awarded a DP for this course students must have

- participated in all class tests with an overall average of at least 40%,
- submitted of all lab activities, with an overall average of at least 50%, and
- submitted of at least 75% of the WPSs.

Pass or Fail Requirements: To be awarded a final grade code of Pass for this course students must have

- met all DP requirements,
- participated in all class tests and exams,
- obtained a subminimum of 40% in the final exam, and
- achieved an aggregate of 50% or greater.

Science Facult Code of Honour: We ask students to commit to this Code of Honour (i.e. doing what is morally right) when completing tasks remotely: all assignments and tests must be a students own work, with no input from others (unless otherwise specified), and no work can be plagiarised. Please commit to this by completing the Code of Honour Quiz on the PHY2010S Vula site.

Remote Teaching Timetable:

Week	Date	Weekly outline	WPSs, Tests & Labs
1	3-7 Aug	Electrodynamics	
2	10-14 Aug	Electrodynamics	Lab 1 (11 Aug); WPS 1 hand-in
3	17-21 Aug	Electrodynamics	WPS 2 hand-in
4	24-28 Aug	Catch up week	WPS 3 hand-in
5	31Aug-4 Sep	Electrodynamics	Class test 1 (Electro)
6	7-11 Sep	Magnetism	Lab 2 (8 Sep) Lab 1 hand-in (8 Sep) WPS 4 hand-in
7	14-18 Sep	Magnetism	WPS 5 hand-in
8	21 Sep	Vacation	
9	28 Sep	Vacation	
10	5-9 Oct	Magnetism	Lab 3 (6 Oct); Lab 2 hand-in (6 Oct) WPS 6 hand-in
11	12-16 Oct	Magnetism	Class Test 2 (Magnetism) WPS 7 hand-in
12	19-23 Oct	Semiconductors	WPS 8 hand-in
13	26-30 Oct	Catch up week	WPS 9 hand-in
14	2-6 Nov	Semiconductors	Lab 3 (3 Nov) WPS 10 hand-in
15	9-13 Nov	Semiconductors	Class test 3 (Semiconductors)
16	16-20 Nov	Consolidation	
17	23 Nov - 4 Dec	Exam (all topics)	