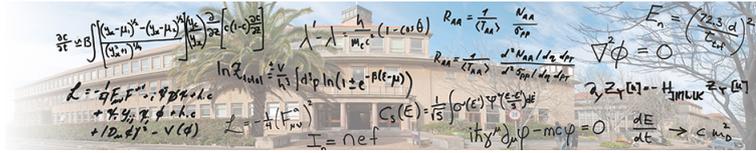




DEPARTMENT OF  
**PHYSICS**  
UNIVERSITY OF CAPE TOWN



## PHY1013F: Physics B for Engineers Course Information 2026

PHY1013F, Physics B for Engineers (Electricity & Magnetism, and Vibrations & Waves), is a second semester introductory physics course – taught in the first semester of the academic year – for students registered in the Faculty of Engineering and the Built Environment. The course consists of lectures as well as problem solving, laboratory and tutorial sessions, all of which take place in the Physics Department, located in the RW James Building, University Avenue. Course material (copies of lecture slides, supplemental information, weekly problem sets, tutorials etc.) as well as announcements will be posted on the PHY1013F Amathuba site (the announcements will also be emailed to your UCT email address, so make sure it is working).

### Course outline & Textbook

The course is the second part of the first year engineering Physics sequence. It aims to provide a foundation in the concepts and mathematics of physical phenomena within the context of vibrations and waves (V&W), and electromagnetism (EM), and features the topics of electric charge, electric field, Gauss’ Law, electric potential, capacitance, current, current density, emf, resistance, resistivity, networks, the magnetic field, Biot-Savart Law, Ampere’s Law, electromagnetic induction, inductance, simple harmonic motion, damped oscillations, resonance, travelling waves, phase velocity, superposition, standing waves, sound waves, sound intensity, Doppler effect, interference and diffraction.

The prescribed text is Randall D. Knight, Physics for Scientists and Engineers, A Strategic Approach (5th Ed), Pearson, Addison Wesley. It will be available to registered students as an e-book on the Pearson MyLab Mastering platform.

### Course convener

Dr Trisha Salagaram, trisha.salagaram@uct.ac.za, RW James Building room 5.11. General administrative queries should be directed to her.

### Lecture venue & Lecturers

The lectures will be delivered in RW James LT4A, 9-10am, Mondays to Fridays. Lecturers are:

EM1 (chapters 22-26): Dr T. Salagaram, RW James Building room 5.11

EM 2 (chapters 27-30): Dr D. Bucher, RW James Building room 404

V&W (Chapters 15-17 & 34): Prof A. Peshier, RW James Building room 412

Questions about material covered in lectures should be directed to the respective lecturer during their consultation times.

## Course Tutor

Mr Aminul Hussein (HSSAMI005@myuct.ac.za)

## Laboratory conveners

The Laboratory coordinators are **Mr M. Christians**, RW James Building Physics Laboratory 1 Prep Room, and **Dr N. Razak**, room 304. All laboratory related queries must be directed to them.

## Laboratory & Tutorial sessions

Laboratory and tutorial sessions alternate weekly. 2 slots will be offered: Thursday and Friday 2- 5pm, see the Lab + Tut calendar. Laboratory sessions will take place in the Course 1 Laboratory (PHYLAB 1). The tutorial sessions will be held in RW James 3B, where students, in groups of three, will work through assigned problems on white boards, assisted by the tutors. Full solutions will not be published for the tutorial sessions.

## Weekly Problem Sets (WPSs)

Each Friday morning a WPS will be available on Pearson MyLab and uploaded on Amathuba under WPS. Students are to work through the all the problems (and are strongly encouraged to attempt the extra, textbook problems) by the end of the following week. Students may consult with each other and approach the course tutor for help if necessary. Before the deadline (11:59pm the following Friday) students must submit the WPS for assessment. Marks obtained for these weekly problem sets will contribute 5% towards the final course mark.

## Attendance and Exemptions

**Attendance at practicals, tutorials, class tests and examinations are compulsory.** Exemption from any of these will be considered ONLY on medical or compassionate grounds and will normally require a medical certificate or an official letter of support. This documentation must be stapled behind a completed Missed Lab/Tut excuse Form and submitted to the Course convener and lecturer within a day of your return to classes. In the case of a valid excuse, the Course convener reserves the right to administer a make-up class test within a week from a missed class test. In the case of a missed laboratory practical the student must arrange with Mr. Christians to do a make-up lab.

If a student wishes to be granted an exemption or extension for a course requirement as a consequence of a planned short absence from the course, a completed Short Leave Application Form, with supporting documentation, must be submitted to the Course convener at least three working days prior to the period in question. Irreversible plans (such as flight bookings) must not be made before such leave has been approved.

## Assessment

| Assessment        | Number    | Weight (%) |
|-------------------|-----------|------------|
| WPS               | 12        | 5          |
| Class tests       | 2         | 30         |
| Laboratory record | 5 reports | 7.5        |
| Lab test          | 1         | 7.5        |
| Final exam        | 1         | 50         |

An aggregate of 50% is required to pass the course. There are no sub-minima in any of the separate assessments. The weighted total of all currently available marks (other than the final examination) constitutes a student's Class record – which may be used for providing interim, confidential reports to legitimate stakeholders (e. g. sponsors, bursary providers).

## Class test dates

Test 1: 24 March 2026, 09:00-09:45, RW James LT4A

Test 2: 12 May 2026, 09:00 - 09:45, RW James LT4A

## Duly Performed (DP) requirements

To be regarded as having Duly Performed (DP) the work of the course, and therefore to qualify to write the final examination, a student must have:

- agreed to the UCT Honour Pledge;
- achieved a Class record (based on the weighted average of all marks available at the time of publishing DP lists) of at least 35%; and
- attended and completed ALL assessments and activities, i. e. labs, tutorials and class tests are compulsory (see Attendance and Exemptions section for exceptions).

## Reassessment

The Physics Department will normally reassess students who achieve an overall mark of between (and including) 45% and 49% for PHY1013F, i.e., students who are graded with an S (e.g., 47S). These 'supplementary' candidates (as well as deferred examination candidates) will write an examination paper that will have the same structure and cover the same material as the final examination, on one day during the week after the examination period. Please do not make irreversible plans (such as flight bookings) during this period. As with the final examination, students' Class record marks are combined with their reassessment marks (with 50-50 weighting) to calculate their final subject mark. For 'supplementary' candidates, any aggregate of 50% or above is graded 50UP – a so-called "unclassified" pass in the subject.

## Course Schedule 2026

| Monday |               | Tuesday |               | Wednesday |     | Thursday |                     | Friday |                     | Lecturer | Chapters |
|--------|---------------|---------|---------------|-----------|-----|----------|---------------------|--------|---------------------|----------|----------|
| 16-Feb | Term 1 starts | 17-Feb  |               | 18-Feb    |     | 19-Feb   |                     | 20-Feb |                     | TS       | 22       |
| 23-Feb |               | 24-Feb  |               | 25-Feb    |     | 26-Feb   | Multimeter (P1)     | 27-Feb | Multimeter (P1)     | TS       | 23       |
| 02-Mar |               | 03-Mar  |               | 04-Mar    |     | 05-Mar   | Tut 1               | 06-Mar | Tut 1               | TS       | 24       |
| 09-Mar |               | 10-Mar  |               | 11-Mar    |     | 12-Mar   | Ohm's Law (P2)      | 13-Mar | Ohm's Law (P2)      | TS       | 25+26    |
| 16-Mar |               | 17-Mar  |               | 18-Mar    |     | 19-Mar   | Tut 2               | 20-Mar | Tut 2               | DB       | 27       |
| 23-Mar |               | 24-Mar  | Class Test 1  | 25-Mar    |     | 26-Mar   | Oscilloscope (P3)   | 27-Mar | Oscilloscope (P3)   | DB       | 28       |
| 30-Mar | vac           | 31-Mar  | vac           | 01-Apr    | vac | 02-Apr   | vac                 | 03-Apr | Good Friday         |          |          |
| 06-Apr | Family Day    | 07-Apr  | Term 2 starts | 08-Apr    |     | 09-Apr   | Tut 3               | 10-Apr | Tut 3               | DB       | 29       |
| 13-Apr |               | 14-Apr  |               | 15-Apr    |     | 16-Apr   | RC Circuit (P4)     | 17-Apr | RC Circuit (P4)     | DB       | 30       |
| 20-Apr |               | 21-Apr  |               | 22-Apr    |     | 23-Apr   | Tut 4               | 24-Apr | Tut 4               | DB / AP  | 30 / 15  |
| 27-Apr | Freedom Day   | 28-Apr  |               | 29-Apr    |     | 30-Apr   |                     | 01-May | Worker's Day        | AP       | 15       |
| 04-May |               | 05-May  |               | 06-May    |     | 07-May   | RCL (P5)            | 08-May | RCL (P5)            | AP       | 16       |
| 11-May |               | 12-May  | Class Test 2  | 13-May    |     | 14-May   | Lab Test (PHYLAB 2) | 15-May | Lab Test (PHYLAB 2) | AP       | 17       |
| 18-May |               | 19-May  |               | 20-May    |     | 21-May   | Consolidaion        | 22-May | Consiladation       | AP       | 34       |

## AI use with proper declaration

The UCT Faculty of Science recognises that some AI tools may aid learning, and that developing AI literacy is essential (see UCT Libraries AI Guide). Therefore, the use of generative AI tools in this course may be permitted for specific assessments, when this is determined to support the course learning goals.

All students are required to develop critical thinking, problem solving, data analysis, scientific writing and other core academic skills independently of AI. Inappropriate use of AI may undermine learning in this regard and lead to academic dishonesty. Students must be able to defend any work that they submit.

Assessments in which AI tools are permitted will be clearly identified by the lecturer-in-charge with specific details of allowed AI usage included in the assessment instructions. A student that chooses to use AI tools for any part of such an assessment (from brainstorming to text editing), must include a clear declaration with their submission. This should state:

“I have used [name of AI tool], as permitted by the lecturer, for the purpose of [brief description of use]. I take full responsibility for the final content of this submission.”

Failure to properly declare AI tools is considered a violation of the University of Cape Town’s rules on academic conduct and plagiarism, as provided in Handbook 3: General Rules and Policies. Students unsure of what constitutes an AI tool, must check with the course convenor.

Students suspected of academic misconduct related to the misuse of AI tools will be subject to the disciplinary process outlined in UCT Handbook 3.