DEPARTMENT OF PHYSICS
UNIVERSITY OF CAPE TOWN

PHY1012F: Physics A for Engineers
Course Information: 2026

PHY1012F: Physics A for Engineers (Mechanics & Thermodynamics) is a half-year course for first-year students registered in the Faculty of Engineering and the Built Environment. The course consists of lectures, problem solving, laboratory and tutorial sessions. The Physics Department is in the RW James Building, University Avenue. All lectures, laboratory sessions and tutorials will take place in this building.

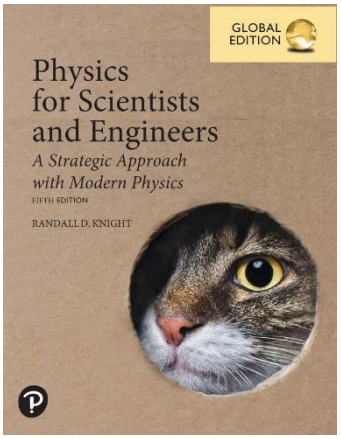
All course information and announcements are posted on the PHY1012F Amathuba site which includes, *inter alia*, copies of the lecture slides, supplemental course material, copies of past examination papers, weekly problem sets (WPS), tutorials, class tests. Course announcements will appear under Announcements and will usually also be emailed to students' *UCT email addresses* (so make sure your address is working!).

Syllabus

The syllabus is that of a standard calculus-based introductory physics course for engineers. Details can be found on the PHY1012F Amathuba site under Course Outline.

Textbook

The prescribed text for PHY1012F / PHY1013S is,
Randall D. Knight, *Physics for Scientists and Engineers, A Strategic Approach* (5th Ed). Pearson, Addison Wesley. A digital version of the text will be made available to you via Pearson MyLab and Mastering learning platform.



Course Coordination

- The PHY1012F **Course Convener** is Mr Dieter Geduld. (Room 3.05, RW James Building, email: dieter.geduld@uct.ac.za). All administrative queries should be directed to him.
- There may be several PHY1012F **course lecturers** during the semester. All queries about material covered in lectures should be referred to the current lecturer during his/her designated consultation times. (see PHY1012F site under meet the course team).
- The **Laboratory Coordinator** is Mr Mark Christians (Prep Room, behind the chalkboard in the Physics 1 laboratory) to whom **ALL** laboratory related administrative queries should be addressed in the first instance.

This year's PHY1012F **Course Tutors** are Moses Mlangeni - MLNMOS004@myuct.ac.za and Josiah De Klerk - DKLJOS001@myuct.ac.za.
They will run help sessions and be available at designated times. (see PHY1012F site under course admin).

Faculty of Science Code of Honour

The University of Cape Town's official statement of general rules and policies (**General Rules and Policies,** Handbook 3, 2026), including a statement of values and expected student and staff conduct, can be found here: Handbooks | University of Cape Town (uct.ac.za)

All students in the Faculty of Science are required to familiarise themselves with UCT's rules and policies.
The Faculty of Science takes UCT's statement of values seriously. Among other things, every member of the Faculty of Science – student and staff – is expected to strive for personal and academic integrity; to be respectful and tolerant towards others; to honour the rights, personal choices and property of others; to take responsibility for their behaviour individually and in groups; and generally, to act as a responsible citizen in our academic community and beyond. As stated in the above-mentioned document: "Truth, fairness, consistency and integrity in both academic and other work, and in all personal and institutional relationships" are key elements of UCT's academic values.

Use of AI

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.

Science 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.

Lectures

Engineering Stream	Venue	Day	Period	Times
CHE (EB001), CIV (EB002), MEC (EB005) & MMT (EB010)	LT3A	Mon to Fri	1st	08h00 – 08h45
EEE (EB009), EME (EB011) & ECE (EB022)	LT3A	Mon to Fri	2nd	09h00 – 09h45

Laboratory/Tutorial sessions

Laboratory and tutorial sessions alternate weekly, and will take place on Monday, Wednesday, Thursday, and Friday afternoons from 14h00 and 17h00. The PHY1012F Lab/Tut/ Calendar (check site under Course Administration) contains, *inter alia*, the schedule of laboratory practicals and tutorials. Laboratory sessions will take place in the Physics I laboratory (PHYLAB 1). Every other week, on the same days as the labs, tutorial sessions will be held in James 3B, where students, in groups of three, will work through assigned problems on white boards. The lecturer and tutors will be present during these sessions to discuss difficulties encountered and to assist if necessary. Full solutions for the tutorial sessions will not be published.

Weekly Problem Sets (WPSs)

Each Friday morning a WPS will be uploaded and can be found on Amathuba under Weekly Problem Sets.

- Students are to work through the all the problems (and are strongly encouraged to attempt extra textbook problems) by the end of the next week. (Students may consult with each other and approach the course tutor for help if necessary.)
- Before the deadline (08:00 the next Friday) students must submit the WPS for assessment.
- Marks obtained for these weekly problem sets will contribute 5% towards the final course mark.

Note: These weekly problem sets, and the tutorials are a good indicator of the type and standard of questions which can be expected in tests and exams!

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 *bona fide* 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 **within a day** of your return to classes.

An application for exemption from laboratory activities for students who are repeating the course must be made using the **Lab Exemption Form** (available on the PHY1012F site) and emailed to Mr. Mark Christians in the first-year laboratory within the first two weeks of term (mark.christians@uct.ac.za).

In the case of a valid excuse, the Course Convener reserves the right to administer a make-up class test/lab activity within 3 days from the missed activity.

Short Leave

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 stapled behind it, must be submitted to the Course Convener at least three (3) 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

The final grade will be made up as follows:

Assessment	Description	Weighting	Comment
Test record	Test 1	15%	(See Amathuba for scope of test.)
	Test 2	15%	(See Amathuba for scope of test.)
Weekly Problem Sets		5%	
Laboratory record	Laboratory reports	7.5%	
	Laboratory test	7.5%	Test based on practicals covered
June examination		50%	~2.5 h
Total		**100%**	

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).

Test Schedule

Time: 18:00 – 19:30
Venues: TBD (Allocation by surname to be announced)
Dates: Test 1 Tuesday 17 March 2026
Test 2 Tuesday 28 April 2026

Duly Performed (DP) Requirements

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

- 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 participated in **ALL** assessments and activities, i.e. class tests, lab practicals and tutorials.
- Completed and submitted **ALL** lab activities, with an overall average of at *least* 50%.

Reassessment

The Physics Department will normally reassess students who achieve an overall mark of between (and including) 45% and 49% for PHY1012F, i.e. students who are graded with an S (e.g. 47S).

Supplementary candidates (as well as deferred examination candidates) will write the same examination paper, which will have the same structure (and cover the same material) as the May/June final examination. **The Supplementary/Deferred Examination is held *on one day in* the week after overall final exams are completed.**
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.