Course Outline: PHY1023H

How is PHY1023H different from PHY1004W? *[Hidden]*

How is PHY1023H different from PHY1031F? *[Hidden]*

Course administration

Course convener:

A/Prof Dale Taylor DL.Taylor@UCT.ac.za 082 515 1062 (Note: you are welcome to email/ WhatsApp me at any time; I will respond when it is convenient for me)

Practical work convenor:

Ms Nuraan Majiet MJTNUR001@myuct.ac.za

Course Tutor:

Mr Chad Leukes LKSCHA002@myuct.ac.za

Class Representatives:

Rorisang Mokoena <MKNROR003@myuct.ac.za>; Tokelo Elvis Thekiso <THKTOK001@myuct.ac.za>; Zarah Bedford <BDFZAR001@myuct.ac.za>

You may contact the class reps if you have complaints, issues or suggestions regarding any aspect of the course (or you are welcome to contact the lecturer directly).

Course communications

Announcements: All announcements will be made in the PHY1023H Vula site, and sent to you as an email.

Questions: There is no such thing as a stupid question, and everyone in the class has found physics difficult at some point, and may benefit from your question. You may ask using the Vula Q&A tool, in the help sessions, or on the class WhatsApp group.

Marks: look at the Vula Gradebook to check your marks for individual assignments as well as your overall mark thus far.

Course structure

- The course will run during terms 2-4.
- The practical work is done in a 3-week lab block in each semester.
- During both theory and lab blocks, daily lessons are provided on Vula on Mon, Tues, Thurs, Fri, which are designed to be completed within an hour. (4 hours total)
- There is a compulsory 2-hour whiteboard tutorial / prac on Wednesdays. There are also optional contact sessions with the lecturer at 10h00 on Mon / Tues / Thurs in Molecular Biology Lecture Theatre 2.
- There is a weekly submission (a Problem Set, Practical Report or Test), which is expected to take at most 2 hours to complete. There is an optional hep session with the course tutor on Friday 10-11 am in the lab.
- Thus the total expected time is 8-10 hours per week.

Textbook

Prescribed textbook: OpenStax College Physics (General Physics A) - see pdf below. This is a free e-textbook. Sections of the textbook are posted in Vula lessons where they are relevant. Printed copies may be obtained for R200 from the Physics Secretary Jill.Patel@uct.ac.za , in room 5.11 RW James.

Any textbook called ‘College Physics’ will also be useful, including the free e-textbook by Crowell (below).

OpenStax General Physics A UCT.pdf

Crowell Mechanics.pdf

Tests and Assignments

There is a weekly submission, either a test, a Weekly Problem Set or a Practical Report. All submission is through the course Vula site. If you are unable to submit through Vula, email the lecturer immediately with the item as an attachment. See the timetable below for the due dates.

Assessment

To be awarded DP, a student must have:

- participated in all class tests;
- submitted all practical reports with an overall average of at least 50%;
- submitted at least 80% of all Weekly Problem Sets;
- and achieved an aggregate of 35% or greater for the above (The aggregate is calculated from the marks in the following proportions: tests 40 %, WPS 20 % and prac work 40 %, i.e. the tests and pracs count equally, and the WPS counts half as much as tests.)

The final course mark will be calculated as follows:

- 50 % Final exam
- 20 % Tests
- 10 % Weekly Problem Sets
- 20 % Practical Reports and Practical Test

Late submissions, penalties & procedures

*If you are unable to meet write a **test** for any reason, please notify the course convenor immediately.*
*No extensions will be granted for the **Weekly Problem Set**, for any reason.*
*Arrangements for late submission of **lab reports** and the mark penalties for late submission will be arranged on a case-by-case basis, depending on the reasons for the late submission.*
*Note that that no-one will be **excused** from any assessment task, for any reason.*

Student Responsibilities

- You are expected to take responsibility for your own learning & general well-being. Participate in this course in such a way as to maximise your learning, despite the constraints you are learning under. You should ask questions / ask for help when you need it.
- Speak up if anything is not as it should be, for example, problems with marks, resources on Vula, tutors etc. You may approach the lecturer directly or go through the class rep (in which case you may choose to remain anonymous).

Course Description

PHY1023H is the Extended Degree Programme introductory physics course. It is equivalent to PHY1031F in content and credits (18 HEQF credits at level 5), but the duration of PHY1023H is 1.5 semesters. PHY1023H begins in the second quarter and is intended for students who have been advised to transfer after initially registering for PHY1004W or PHY1031F. The course places an emphasis on the strengthening of foundational concepts and skills, the carefully paced introduction of new material, and the development of sound approaches to effective learning. Students who pass PHY1023H may proceed into PHY1032F (if not wanting to continue with physics beyond first-year level) or PHY1004W (if wanting to continue with physics at second-year level). Students who pass both PHY1023H and PHY1004W will be given credit for both courses.

Syllabus

Fluids: hydrostatics, hydrodynamics. (2 weeks)

Tools and skills: essential mathematical, diagrammatic and conceptual tools and skills for Physics: co-ordinate systems, vectors, rates of change, mathematical techniques and their relationship with physical phenomena. (1.5 weeks)

Laboratory skills: inquiry, experiment design, data handling, uncertainty, report writing, computer skills (6 weeks)

Mechanics: kinematics, forces, dynamics, momentum, impulse, work, energy, power, collisions, rotation, rotational dynamics, torque, angular momentum, static equilibrium, gravitation. (5.5 weeks)

Vibrations and waves: simple harmonic motion, damped oscillations, forced oscillations, resonance, travelling waves, superposition, standing waves, sound waves, sound intensity, Doppler Effect. (4 weeks)