NELSON MANDELA UNIVERSITY

DEPARTMENT OF PHYSICS

COURSE GUIDE:

ZTMD121: PHYSICS FOR DIETITIANS / ZTM121: PHYSICS FOR PHARMACISTS

Credits: 7

Lecturer: Mr Roelof Roodt

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1. Lecturer contact details

Office: Building 13 – South Campus (Physics & Chemistry Building), Room 00 64
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2. Welcome

Welcome to your semester of physics! I hope that you enjoy this course and walk away with a solid foundation in introductory physics. Physics IS NOT difficult! It does, however, require a solid foundation in mathematics and consistent effort on your part. If your maths is a bit rusty, you are STRONGLY advised to get a head start by revising the relevant material (see *Section 2: Math Toolkit* in your *Physics Workbook*) BEFORE the semester gets busy. I would like to urge you to work consistently throughout this course. If at all possible, don't go to bed without understanding the concepts taught to you that day! It makes ALL the difference come test time.

To help you along, I have a compiled a list of tips for passing physics well (see *Section 1: How to Study Physics* in your *Physics Workbook*). Here's to a successful 2026!

3. Aim

The ZTMD121/ZTM121 course has been designed to assist with the physics needs of students majoring in dietetics and pharmacy, respectively. The course aims to provide students with a solid foundation in introductory physics, with focus being given to topics and applications most relevant to the human body and the clinical environment. An understanding of the basic principles of physics is essential to understanding many aspects of the medical field, from physiological and pharmacological processes to instrumentation and imaging techniques.

In addition to simply imparting knowledge, the Physics Department at Nelson Mandela University strives to develop a number of skills and attributes in our graduates that we deem necessary for success in the 21st century. A list of these skills and attributes can be found in the ***Graduate Skills and Attributes Framework*** document (available for download on the *1st Year Physics Practicals* Moodle site). Your practical course has been intentionally designed to develop these outcomes, and the key skills developed in each practical are clearly indicated.

A major focus of your theoretical course this semester is to develop the problem-solving skills you need to effectively apply the theory. Specifically, you will be trained in the ***Analysis Model Approach to Problem-Solving*** (as summarised in *Section 1: How to Study Physics* in your *Physics Workbook*).

4. Prescribed textbook

College Physics (Paul Urone, Roger Hinrichs, Kim Dirks, Manjula Sharma), OpenStax.

This is an opensource textbook available at:
https://openstax.org/details/books/college-physics

5. Roster

Lectures will take place as scheduled on the timetable.
https://forms.mandela.ac.za/timetable/CTO_CC_ThisYear/Timetable.asp

LECTURE PERIOD: Monday 9 February – Tuesday 26 May 2026
FIRST PHYSICS LECTURE: Tuesday, 21 February 2023

ROSTER	Day	Time	Venue
LECTURES	Tuesday Friday	10:25 - 11:35 11:45 - 12:55	35_1_0101 123_00_26
PRACTICALS	Tuesday	14:25 - 17:25	13_0_0076

6. Learning & teaching approach

This course will be implemented as follows. For each section in your *Physics Workbook*, students are required to attend the associated **lecture(s)**, attempt the **tutorial (tut) assignment**, **upload** a copy of the completed tutorial assignment, and write the associated **tutorial (tut) test**.

The **tut assignment** for each section in your *Physics Workbook* will be issued in class. You are required to upload a copy of the completed tut assignment for each section via Moodle before writing the associated tut test. Questions arising from the tut assignment must be communicated to the lecturer via email.

At the end of each section in the *Physics Workbook*, you will write an online **tut test** covering the uploaded tut assignment. Tut test deadlines are indicated in the *Physics Schedule* available under *Admin* on Moodle. **Students will only be permitted to write a tut test once the associated tut assignment has been uploaded on Moodle.**

7. Practical course

Prac format: Your practical course will consist of five (5) practicals. Each practical will run over two weeks and consists of an on-line pre-practical assignment (week 1) and a scheduled laboratory session (week 2). The purpose of the pre-practical assignment is to prepare for the laboratory session by completing an online lesson and a pre-practical quiz. *Your success in the laboratory session depends on your engagement with the pre-practical assignment.*

All practicals have the same structure:

Pre-practical assignment (PPAa): Lesson	3 hrs	Individual assessment	Moodle	Week 1
Pre-practical assignment (PPAb): Quiz		Individual assessment	Moodle	Week 1
Laboratory Session (S)	3 hrs	Group assessment	Lab	Week 2
Post-practical quiz (PPQ)	10 min	Individual assessment	Moodle	Week 2

It is compulsory that you complete the pre-practical assignment BEFORE (Friday midnight) the scheduled laboratory session. No excuses will be entertained, and non-complying students will receive zero for the practical in question.

Prac site: Practicals are administered via the *1st Year Physics Practicals* Moodle site (see section *9. Get Connected!*).

Important information: The following information is available for noting/download on the practical Moodle site:

- Aims of the practical course: See *Graduate Skills and Attributes Framework*
- *Practical rules*
- *Student Handbook*

Lab technician details: For practical related queries (prac sheets, prac groups, marks, etc.), please contact the physics undergraduate lab technician:

Mr Albert Liu
Office: Building 13, Room 0G73
Tel: 041 504 2145
Email: Hsien-Chang@mandela.ac.za

Prac roster: The prac roster will be uploaded on Moodle during the first week of term. Below is a list of the practicals you will be completing this semester:

Prac 1 - Uncertainty in Measurement
Prac 2 - Introduction to Mathematical Modelling and Curve Fitting *(Graphical Methods)*
Prac 3 - Newton's Laws
Prac 6 - Calorimetry
Prac 8 - The Compound Microscope/Prac 7 - Reflection and Refraction of Light

8. Notional hours

The SA Qualifications Authority (SAQA) uses a credit system based on the idea that one credit equals 10 notional hours of learning. 'Notional hours of learning' refers to the learning time that it would take an average student to meet the outcomes of a course. It includes time spent on activities such as attending lectures, practicals, individual learning activities and assessment. ZTM121/ZTMD121 is a 7-credit course. Consequently, you should be spending 70 notional hours on physics this semester. There are 14 weeks of lectures this semester. This translates to 5 hours of physics per week. If you are not spending at least 1 hour a day on physics, then you are not working hard enough!

Along the same line of reasoning, a full credit load (60 credits per semester) translates to 43 hours per week. That's almost 9 hours of work per day!

9. Get Connected!

In this course, we make extensive use of Moodle to support learning and teaching. You are required to promptly **self-enrol** in the following courses:

Theoretical course:

- Link: https://funda.mandela.ac.za/course/view.php?id=1429
  Enrolment key: ZTM/D121

Practical course:

- Link: https://funda.mandela.ac.za/course/view.php?id=649
- Enrolment key: Physics

IMPORTANT: Should you not have access to Moodle (due to delayed registration, for example) you are required to contact your lecturer IMMEDIATELY to make alternative arrangements. Failing to do so may result in missed tests and practical sessions, and falling behind in the curriculum.

10. General and departmental rules

Attendance requirements: The Department of Physics requires that a student must complete all practicals and semester tests. Unless valid reasons exist (e.g. doctor's certificate) for missing any of the practicals or semester tests, duly performed approval will not be granted to a student.

Practical exemptions: Repeating students may apply for practical exemption for the practicals they passed in the preceding year. Please note the following:

i. Deadline: Application for exemption must be made in the first week of lectures of each semester.
ii. Practicals for which the mark obtained was less than 50% must be repeated.

iii. Procedure: Obtain a printout of your previous year's practical marks from Mr Liu (Room OG73), take it to the HoD for approval, and return it to Mr Liu.
iv. Timeframe: Exemption can only be applied for once, and in the year immediately after the one in which you have done the practicals.

Procedure in the case of tests or practicals missed due to valid reasons:

i. For valid reasons, the test/practical exemption form (available under *Admin* on Moodle) needs to be completed not more than 7 days after the missed practical or test.
ii. On receipt of the exemption form (within the required timeframe), the student will be granted a sick test and/or a second opportunity to complete the practical in question.

11. Tutor

Physics tutor sessions will take place on South campus in 13 00 76 from 13:00 to 14:15 on Tuesdays. Your tutor will communicate with you and I will also CC them in our weekly emails.

12. Course information

Course content: See *Learning Guide* under *Admin* on Moodle for a list of learning events and the associated learning objectives.

Course schedule: See *Schedule 2023* under *Admin* on Moodle.

Moderation: Internal

Pre- and co-requisites: None

13. Mathematics pre- and co-requisites

Over and above the university entrance requirements, there are no official mathematics pre- and co-requisites for ZTM121/ZTMD121. HOWEVER, this course relies heavily on the assumption that you are proficient in basic algebra. If your maths is a bit rusty, you are STRONGLY advised to get a head start by revising the relevant material (see *Section 2: Math Toolkit* in your *Physics Workbook*) BEFORE the semester gets busy.

14. Assessment

a. Mark composition (PASS MARK for the semester is 50%)

Tutorials*	+	Practicals**	+	Tests***	+	Exam	=	FINAL
5%	+	13%	+	15%	+	67%	=	100%

* Average of 10 tutorial tests. ** Average of 5 practical marks. *** Average of 2 semester tests.

PLEASE NOTE: The above mark composition is currently under review, and the exam weighting may be changed to 60 %.

b. Provisional semester test dates

You will be writing two **60-minute** semester tests. Tests will take place during a lecture period in the lecture venue. The dates for the tests are given below:

Test 1: Tuesday, 24 March 2026

Test 2: Friday 8 May 2026

Please note that, due to timetable constraints, it is not uncommon for students to write more than one semester test on a given day. Consequently, related requests regarding test times will only be considered in the case of direct timetable clashes.

15. Consultation

I am available for consultation in my office. Please contact me via email to arrange an appointment. Consultation times are Tuesdays and Thursdays BETWEEN 13:00 and 14:15.

VERY IMPORTANT!

1. Attendance requirements: In accordance with Rule G1.5 (Attendance Requirements in the general prospectus), a student must complete ALL practicals and semester tests. Exception will only be made in the case of a cogent medical reason.

2. Due performance (DP): In accordance with Rule G1.7.2 (Examination Admission in the general prospectus), a student must have a class mark of 40% and have met the attendance requirements stated above to be allowed to write exams.

3. Pass requirements: In accordance with Rule G1.7.7 (Pass Requirements) a student must obtain a sub-minimum mark of 40% for the examination and a final mark of 50% in order to pass a module.

4. Reassessment examinations: Please refer to Rule G1.7.13 in the general prospectus regarding supplementary examinations.

   4.1 Note: Only students with a final unrounded exam mark of at least 45% will qualify for a reassessment examination.
   4.2 A re-examination does not constitute a separate new assessment; and the final year mark obtained may not exceed 50%.