

Open University of Mauritius
Foundation Course
Foundation Level Physics-OUfc005

1. Introduction

In line with its philosophy to democratise access to university education, the Open University of Mauritius offers Foundation Courses. These courses aim at better preparing learners for higher education while allowing them to meet the minimum requirements to undertake undergraduate studies. They have been carefully developed by a team of experts to ensure smooth transition to university. They also motivate learners and give them a greater chance of succeeding. They play a pivotal role in helping learners to revisit lost skills, while giving them the necessary confidence and preparatory experience they need for success at university. However, they are not intended to replace secondary school courses. On successfully completing four foundation courses (8 modules) including English through Open Distance Learning (ODL), they can join degree programmes.

The ODL mode of delivery enables convenient self-study within a flexible framework. This mode of delivery allows learners to learn at their own pace, in their own place and time without disrupting their social, professional and domestic commitments hence, allowing them to earn while learning.

2. Aim

The foundation course on Physics adopts a three-pronged approach to facilitate learning and develop a liking for Physics. It enables the learner to have a good grounding, build concepts and visualise their applications in day-to-day real life situations. Units pertaining to our physical world have been addressed. These include the following:

- Measurement techniques - important in calculations and experiments. Minor errors can result in major catastrophes. Therefore, accuracy is crucial e.g. in sending a space craft to the other planets such as Mars. We know there have been major accidents in space.
- Mechanics – motion based on Newton’s Laws.
- Matter - different states of matter, their inter conversions to understand melting, evaporation and boiling etc.
- Heat – principles of thermometry. The meteorological services rely on temperatures amongst others for weather forecast. How to record temperatures will be demonstrated.
- Waves – general properties and their graphical representations.

- Electricity - you press a switch and electricity flows, how does this happen.
- Electro-magnetism – its use in the manufacturing of lifting equipment. Magnetic fields are now made use of on the football pitch to decide whether a goal can be allowed or not because of numerous human errors while refereeing.
- Nuclear Physics – made use of in medicine to diagnose malignant disorders e.g. the use of Nuclear Magnetic Resonance (NMR), Scans, Echography.

3. Course requirements

- SC/GCE O-level with 3 credits + 1 A-level
(Applicants should be less than 25 years of age)
- Mature candidates will be considered on their own merit.

4. Course Duration

Minimum	1	year
Maximum	2	years

5. Minimum credits required for the award

Total: 8 credits

Each credit in the University's system is equivalent to a minimum of 20 hours of study including all learning activities (i.e. reading and comprehending the print material, listening to audio, watching video, attending tutorials/counseling sessions, writing assignment responses and preparation for the examinations). Thus, a 4 credit course involves a minimum of 80 hours of study.

6. Assessment

- Assignments 30%
- Examinations 70%
- Overall pass 40%

Assessments will be based on written examination of 2-hour duration and continuous assessment carrying a maximum of 30% of total marks. Continuous assessment will be based on assignment(s). For a learner to pass a module, an overall total of 40% for combined continuous assessment and written examination components would be required without minimum thresholds within the individual continuous assessment and written examination. Learners may re-sit up to a maximum of two failed modules for the semester of the programme.

7. Course structure

The syllabus consists of 2 modules of 4 units each.

Each module is designed for approximately 80 hours of study including self-marked assessments. In all, the 2 modules would be equivalent to 160 hours of study time.

8. Module Outline

Oufc005111-Physics I Unit 1 <ul style="list-style-type: none">• Measurement Unit 2 <ul style="list-style-type: none">• Mechanics Unit 3 <ul style="list-style-type: none">• Matter Unit 4 <ul style="list-style-type: none">• Heat	Oufc005121-Physics II Unit 5 <ul style="list-style-type: none">• Waves Unit 6 <ul style="list-style-type: none">• Electricity Unit 7 <ul style="list-style-type: none">• Electromagnetism Unit 8 <ul style="list-style-type: none">• Nuclear Physics
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9. Content Outline

Oufc005111-Physics I

Unit 1

Concept of measurement, measurement of lengths, time and mass, SI units, vector and scalar quantities, uncertainty, uncertainty in addition, subtraction, multiplication and division, random and systematic errors, precision and accuracy, graphs, calibration curves

Unit 2

Displacement, distance, speed, velocity, acceleration, uniform and non-uniform motion, graphical representation of motion, acceleration of free fall, Newton's laws of motion, forces, component of forces, work done, circular motion, Newton's law of gravitation

Unit 3

Phases of matter, atmospheric pressure, pressure exerted by gases, barometer, manometer, Hooke's law, Young's Modulus, elastic and plastic deformation, Brownian motion, Boyle's law, Charles law, pressure law, equation of state.

10. Learning Outcomes

At the end of this course, the learner should be able to:

- demonstrate understanding of the principle behind measurements
- identify errors in measurements
- demonstrate understanding of concepts related to motion
- draw good graphs to represent motion
- explain the phases of matter
- distinguish between the three states of matter
- illustrate the principle of thermometry
- distinguish among different types of wave motion
- explain related terms associated with wave motion
- demonstrate understanding of key concepts in electricity
- demonstrate understanding of the concept of magnetic fields

11. Guidelines for self-study

This manual aims at fulfilling the preciously identified learning objectives. Despite the fact that this manual is self-contained, you are expected to do some additional research in books to deepen your understanding.

12. How to use the Manual

- Read the overview and learning objectives of each Unit. This will help you in identifying the knowledge and skills that is required to successfully complete the study of the Unit.
- Use the accompanying video.
- E-mail the tutor in case you don't understand any part of the manual.

13. How to study

- Plan your study time carefully
- Read the Unit thoroughly. Prepare a list of questions that you may ask your tutor. Note that the questions should be relevant to the Unit studied.
- Be a critical thinker
- Work your activities. It is important for you to attempt all activities as this will give you an idea of concepts that you have not understood.
- Re-work your corrected activities later.
- You are expected to study regularly as there is no 'easy' way to pass the examination.

14. Supporting Materials

Manual	Open University of Mauritius
Video	
References	