

DEPARTMENT OF PHYSICS AND ELECTRONICS

# PHYSICS 1E2

## COURSE BROCHURE

### 2021

## 1 THE COURSE

Physics 1E2 is an Introductory Electronics course that runs in the second half of the year.

Any student accepted into the university may register for Physics 1E2, which affords students in a wide range of disciplines an opportunity to understand modern electronic devices such as computers. During this course, you will receive an introduction to basic electricity and electronics and how modern computers operate. Entry into Physics 1E2 does not require that a student has attended or passed Physics 1E1.

## 2 OUTCOMES and ASSESSMENT

Learning outcomes for the Physics 1E2 course are specified below.

- **Basic knowledge**

Students will know and apply the concepts and laws of electronics to understand and explain the operation circuits covered by the course as well as design several key circuits.

- **Skills**

Students will develop the skills required for scientific and technological inquiry, to solve problems and make informed decisions.

## 3 ADMINISTRATION

Mr A Sullivan will teach physics 1E2 and Dr S Kuja will be in charge of practicals. The laboratory technician is Mr Chris Soybayeni, and the departmental administrator is Ms Ncebakazi (email: [n.ntsokota@ru.ac.za](mailto:n.ntsokota@ru.ac.za)).

If you have any issues regarding the lectures or practical classes, you are welcome to see or email the course co-ordinator, Mr A Sullivan. He can be found in **room 39** (or email address: [a.sullivan@ru.ac.za](mailto:a.sullivan@ru.ac.za)).

## 4 LECTURES

Due to Covid-19, the lectures will be conducted remotely, mainly through the **RUconnected** site. However, if the situation changes and we resume face-to-face (F2F) lectures, you are **expected** to attend all lectures. All F2F lectures will be held in the Physics Upper Lecture Theatre.

F2F Lecture Times:

Monday	10:30	(period 4)
Tuesday	11:25	(period 5)
Wednesday	07:45	(period 1)
Thursday	08:40	(period 2) this is the tutorial period
Friday	09:35	(period 3)

## 5 NOTICES

The announcements, tutorials, tutorial memos and other relevant course materials will be made available on RUconnected. The onus is on you to check the RUconnected website regularly. You will be informed on the available online tutors to contact for extra tuition, especially with the tutorial questions.

Note that if the situation changes to F2F lectures, the main Departmental notice board located in the entrance foyer to Room 7 in the Physics Department will also be used to display some of the learning materials. The ADP noticeboard is located near the exit closest to the General Lecture Theatre (GLT). If you require extra tuition or failing a test, it is highly suggested that you make a booking with the ADP tutor.

## 6 PRACTICALS

### 6.1 Case of F2F Practicals

You will be assigned to a particular group on a particular day of the week by the Dean of Science. Your practicals are held in Room 17 in Physics Department.

Before each practical there is an introductory talk at 14:00 in the Physics Laboratory (Room 17). We expect you to have read the instructions for the correct practical beforehand.

For every practical, it is your responsibility to ensure that all **HURDLES** are signed in your practical manual by a demonstrator before you leave and that you are marked present. **Attendance of practicals and tutorials is compulsory.**

If you miss a practical for any reason, arrange with a member of staff, to catch up on the missed work as soon as possible. (See DP REQUIREMENTS below).

### 6.2 Case of Online Practicals

There will be no online practicals if F2F practicals are not possible.

## 7 TUTORIALS

Tutorials will be taken up with the discussion of pre-assigned problems you will have tackled in advance of the session and of other questions you may have. Solutions to all problems will be posted on RUConnected.

## 8 TEXTBOOKS

There is no prescribed textbook.

## 9 CALCULATORS

You are expected to have a scientific calculator, which you will need in all practicals, tests and examinations.

## 10 HANDOUTS

### 10.1 Case of F2F Lectures:

You will receive a considerable quantity of printed matter from us during the year, such as the practical manual, test papers, pamphlets, and the like. To cover the cost of printing, we debit your account with the University, R90.00

### 10.2 Case of Online Lectures:

No handouts. Most of the learning materials will be on RUconnected website.

## 11 TESTS

There will be a test approximately every two weeks. You will sit the test during the usual lecture time or online. These tests are intended to encourage you to keep up with the work and help you keep track of your progress. The average of your test marks in each semester make up your Class Record Mark, **which is combined with your examination marks to give your final mark for the semester.**

The test venue is Room 17A if it is F2F assessments, but the tests will be available on RUconnected if it is an online assessment. The provisional dates of the tests are provided in the course notes.

Usually, the test comprises 10 multiple choice questions and a “free-response” section. The marks are usually but not always divided in the ratio 40:60.

**WARNING:** Some may think it is easy and convenient to cooperate with others writing a test. It certainly is easy to detect such attempts at collusion. Since the tests count directly towards your final result, cheating attempts are taken seriously, and cheating penalties are very severe.

If you miss a test, you will be given a mark of zero unless you have obtained prior permission to miss the test from your lecturer or the Head of Department, or an appropriate MEDICAL CERTIFICATE is provided, preferably by a doctor. The leave of absence should be handed in within 2 weeks of the missed test or practical, or you will be counted as absent. See the official Department notice titled “LEAVE OF ABSENCE”.

## 12 DP REQUIREMENTS

To be allowed to write the examinations, you must have “duly performed” the work of the class. For each semester this means

- (a) attending **at least 80 %** of the tutorial sessions and **at least 80 %** of the practical sessions (whether F2F or online);

- (b) obtaining a class record mark of **at least 45 %** for Physics 1E2.
- (c) attending 80% of the lectures (whether F2F or online)

### 13 EXAMINATIONS, FINAL MARK AND SUBMINIMA

To be admitted to an examination, you must have met the DP requirements as indicated on section 12.

The final examinations for each semester are held at the end of that semester. In the theory papers, the marks are divided between a multiple-choice and a “free-response” section. No choice of questions is allowed in any of the examination papers. This has the advantage from your perspective that you don’t have to spend precious time deciding which questions to answer.

The Physics 1E2 examinations in November consist of a 2-hour theory paper and a 2-hour practical.

In each semester the **final** mark is calculated as follows.

$$\text{Exam \%} = (2 \times \text{Theory \%} + \text{Prac \%})/3$$

$$\text{Final \%} = (2 \times \text{Exam \%} + \text{Class Record \%})/3$$

**The Class Record mark’s inclusion implies that should your Class Record be a low mark; your written examination will have to be very much better for you to pass.**

Thus if your Class Record is 40 %, you will need an examination mark of 55 %; if your Class Record is as low as 35 %, you will need 58 % in the written exams, a virtual impossibility, as, statistically speaking, your end of year mark is likely to be roughly within 5 points of your class record. Your average test mark is a very good indication of your performance in the examinations.

SUBMINIMA: The subminimum exam mark is 40%.

There is a Supplementary Examination the following February for Physics 1E2.

The laboratory will NOT be accessible after the last practical or during Swot Week.

### 14 STUDY TECHNIQUES

To succeed in Physics, you are best advised to systematically and regularly work at the subject. We encourage you to study Physics for at least an hour each day. This time should be spent:

- (i) learning key concepts and definitions;
- (ii) solving problems;
- (iii) supplementing lecture notes using your textbook as necessary;
- (iv) working on unfamiliar material.

The fact that we assign only a limited selection of tutorial problems should not deter you from attempting others. The set problems are the minimum number to be attempted in order to master the work. Please pay attention to examples worked out during lectures, examples provided in the notes and class and the problems set in the tutorials. Many such examples are usually the basis of the final examination paper.

Tutors are available to provide help, advice and additional tuition.