



SAMUEL ADEGBOYEGE UNIVERSITY
OGWA, EDO STATE
COLLEGE OF BASIC AND APPLIED SCIENCES
DEPARTMENT OF MATHEMATICS AND PHYSICAL SCIENCES

Course Code: PHY 221

Course Title: ELECTRIC CIRCUIT & ELECTRONICS

Status: 3 Credits Units (Core)

Semester: Second

Course duration: 2 hours Lecture; 1 hour Tutorial per week for 15 weeks (45 hours)

Time: Monday 11:00 am – 1:00 pm; Friday 11:00 am - 12:00 pm

Location: A112 Lecture Room II

Lecturer: Popoola, Felix A. **Tel:** 08060148600

E-mail: felixpopoola@gmail.com; fpopoola@sau.edu.ng

Office Location: Office 18, Department of Mathematics and Physical Sciences,
College of Basic and Applied Sciences

Office Hours: Tuesday 1:00 - 3:00 pm; Thursday 12:00 – 2:00pm

A. INTRODUCTION:

This course is designed for students to identify different components and functions of an electric circuit. It will help students to understand the conduct of electric charges in materials, network analysis and how to calculate various parameters concerning charges. Therefore, the course will expose the students to diverse areas of applications of electronics.

B. GENERAL OBJECTIVES

At the end of the course, the students should have understood the following:

1. Determination of quantities of current, charges, and voltage in a circuit.
2. The network analysis of electric circuit.
3. Basic concepts of semiconductors and applications in electronic devices.
4. Construction and simple application of p-n junction diodes.

C. COURSE CONTENT

D.C. circuit: Ohm's law. D.C. Series circuit; parallel circuit; Series-parallel circuit, equivalent resistance; Kirchhoff's laws; network analysis and circuit theorem. AC circuits: Inductance; capacitance; the transformer; sinusoidal wave forms; r.m.s. and peak values; power; impedance and admittance series RLC circuits; Q-factor; resonance; filters. Electronics: Semiconductors; PN-junction; field effect transistors; bipolar transistors; characteristics and equivalent circuits; amplifier; feedback oscillators.

D. COURSE OUTLINE

Week	Topic
1	D.C. Circuits
2	Kirchhoff's laws
3 – 5	Network analysis and circuit theorem
6 – 9	A.C. circuits
10 – 12	Electronics
13	Revision

E. COURSE DELIVERY METHODOLOGY:

Face to face Lecture method.

F. METHOD OF GRADING

Attendance –	5%
Un-announced quizzes -	5%
Mid-Semester Test -	10%
Assignment –	10%
Examinations -	70%
Total	100%

Assignment: Weekly assignments will be given to students. The date for submission will be announced.

Course Requirements: Pre-requisite - PHY 112 (Electricity, Magnetism and Modern Physics). A student must have nothing less than 75% attendance at lectures to be qualified to write the semester examination.

G. GROUND RULES AND REGULATIONS

1. University guidelines on attendance requirements will be strictly observed in this course. Thus, attendance as well as participation is a prerequisite and count for 10% of students' overall grade.
2. No student will be allowed into the lecture hall 5 minutes after the lecture must have commenced.
3. Improper and indecent dressing will not be allowed in the lecture hall.
4. Students are expected to be well disciplined and they should exhibit this through their punctuality at lectures and prompt attendance to class assignments.

H. ALIGNMENT WITH SAU VISION/MISSION/CORE VALUES/GOALS

Samuel Adegboyega University has the vision of becoming a world class university. For this to happen, Department of Mathematics and Physical Sciences must be the flagship.

I. RECOMMENDED TEXTS:

1. Michael Nelkon and Philip Parker (1995). *Advanced Level Physics* (5th ed.). London: Heinemann.
2. Mehta V.K. and Rohit Mehta (2012). *Basic Electrical Engineering*. New Delhi: S. Chand
3. Guar R. K. & Gupta S. L. (2001). *Engineering Physics* (8th ed.). New Delhi: Dhanpat Rai

Note: All reference materials are available in the University Library.