



Course Specification

— (Bachelor)

Course Title: **Electronics**

Course Code: **PHYS26345**

Program: **Physics**

Department: **Physics**

College: **Science**

Institution: **University of Bisha**

Version: **3**

Last Revision Date: 25 July 2023





Table of Contents

A. General information about the course:	4
1. Course Identification	4
2. Teaching mode (mark all that apply)	4
3. Contact Hours (based on the academic semester)	4
B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods	5
C. Course Content	5
D. Students Assessment Activities	7
E. Learning Resources and Facilities	7
1. References and Learning Resources	7
2. Required Facilities and equipment	7
F. Assessment of Course Quality	7
G. Specification Approval Data	8



A. General information about the course:

1. Course Identification

1. Credit hours: 3

2. Course type

A. University College Department Track Others

B. Required Elective

3. Level/year at which this course is offered: 6th Level / 3rd year

4. Course general Description

This course introduces the characteristics and applications of semiconductor devices, diodes, transistors circuits. Bias analysis of the electronic circuits and their applications.

5. Pre-requirements for this course:

NA

6. Co- requirements for this course:

NA

7. Course Main Objective(s)

Recognize the fundamental of electronic devices and circuits.

2. Teaching mode (mark all that apply)

No	Mode of Instruction	Contact Hours	Percentage
1.	Traditional classroom	3	100%
2.	E-learning		
3.	Hybrid <ul style="list-style-type: none"> • Traditional classroom • E-learning 		
4.	Distance learning		

3. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	45
2.	Laboratory/Studio	
3.	Field	
4.	Tutorial	





5.	Others (specify)	
	Total	45

B. Course Learning Outcomes (CLOs), Teaching Strategies and Assessment Methods

Code	Course Learning Outcomes	Code of CLOs aligned with program	Teaching Strategies	Assessment Methods
1.0	Knowledge and understanding			
1.1	Recognize electrical properties of semiconductors.	K.2	Lectures Solve problems	Written test Reports Homework Quizzes
1.2	Describe diode and transistor basics.	K.2		
1.3	Recognize some signal processing (rectifying and amplifying).	K.2		
2.0	Skills			
2.1	Solve problems in the semiconductors.	S.1	Lectures Solve problems.	Written test Reports Homework Quizzes
2.2	Analyze the diode and transistor circuits.	S.1		
2.3	Analyze some signal processing (rectifying and amplifying).	S.1		
3.0	Values, autonomy, and responsibility			
3.1	Exhibit self-learning skills independently.	V.2	Self-learning	Reports Presentation

C. Course Content

No	List of Topics	Contact Hours
1.	Introduction to Electronics. The Atom. Materials Used in Electronics. Current in Semiconductors. N-Type and P-Type Semiconductors.	4.5
2.	The PN Junction and Diodes The PN Junction. Diode Operation. Voltage-Current (V-I) Characteristics of a Diode. Diode Models.	4.5
3.	Diodes applications Half-Wave and Full-Wave Rectifiers. Power Supply Filters and Regulators.	4.5
4.	Diodes applications.	4.5





	Ripple Factor of output voltage signal of rectifier's circuit . Voltage Multipliers.	
5.	Special purpose diodes. The Zener Diode Zener Diode Applications Optical Diodes Other Types of Diodes	4.5
6.	Bipolar junction transistor. BJT Bipolar Junction Transistor (BJT) Structure. Basic BJT Operation BJT Characteristics and Parameters	4.5
7.	Bipolar junction transistor BJT application. The BJT as an Amplifier. The BJT as a Switch. The Phototransistor.	4.5
8.	Transistor bias circuits. BJT The DC Operating Point Voltage-Divider Bias	4.5
9.	BJT amplifier Amplifier Operation Transistor AC Models The Common-Emitter Amplifier Multistage Amplifiers	4.5
10.	Field Effect Transistor (FETS). The JFET JFET Characteristics and Parameters	4.5
Total		45

Table: The matrix of consistency between the content and the learning outcomes of the course.

	Course Learning Outcomes						
	1.1	1.2	1.3	2.1	2.2	2.3	3.1
Topic 1	✓			✓			✓
Topic 2		✓			✓		✓
Topic 3		✓			✓		✓
Topic 4		✓			✓		✓
Topic 5		✓			✓		✓
Topic 6			✓			✓	✓
Topic 7			✓			✓	✓
Topic 8			✓			✓	✓
Topic 9			✓			✓	✓
Topic 10			✓			✓	✓



D. Students Assessment Activities

No	Assessment Activities *	Assessment timing (in week no)	Percentage of Total Assessment Score
1.	Homework, quizzes, reports, and presentation.	1: 15	10 %
2.	First term exam	7: 8	20 %
3.	Second term exam	12:13	20 %
4.	Final exam	End of Semester	50 %

E. Learning Resources and Facilities

1. References and Learning Resources

Essential References	- ELECTRONIC DEVICES, 10 th Edition, Floyd. Thomas L. Pearson Education, Limited, (2018).
Supportive References	- ELECTRONIC DEVICES AND CIRCUIT THEORY, 11 th Edition, Boylestad, Robert L. Prentice Hall, (2013). - MICROELECTRONIC CIRCUITS, 7 th edition, Kenneth Carless Smith, Adel S. Sedra, Oxford University Press, (2015).
Electronic Materials	- Blackboard. - PowerPoint presentations. - Digital library of University of Bisha https://ub.deepknowledge.io/Bisha
Other Learning Materials	NA

2. Required Facilities and equipment

Items	Resources
facilities	Classrooms, Physics lab.
Technology equipment	Data show or smart board.
Other equipment	NA

F. Assessment of Course Quality

Assessment Areas/Issues	Assessor	Assessment Methods
Extent of achievement of course learning outcomes.	Teachers, students.	Direct (Final exams), Indirect (Questionnaire).



Assessment Areas/Issues	Assessor	Assessment Methods
Effectiveness of teaching.	Teachers, students.	Indirect (Questionnaire)
Effectiveness of assessment.	Teachers, students.	Indirect (Questionnaire)
Quality of learning resources	Teachers, students.	Indirect (Questionnaire)
Quality of facilities available	Teachers, students.	Indirect (Questionnaire)
Fairness of evaluation	Peer reviewer.	Direct (Final exams reevaluation).

G. Specification Approval Data

COUNCIL /COMMITTEE	College of Science Council
REFERENCE NO.	20
DATE	17 August 2023

