



# Course Specification

— (Bachelor)

Course Title: **Electricity and Magnetism -1**

Course Code: **PHYS26241**

Program: **Physics**

Department: **Physics**

College: **Science**

Institution: **University of Bisha**

Version: **3**

Last Revision Date: 25 July 2023



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## 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: 4<sup>th</sup> Level / 2<sup>nd</sup> year

#### 4. Course general Description

This course provides a conceptually based exposure to the fundamental principles and processes of electricity. Topics include concepts of electric forces, electric fields, electrical potential, capacitance, current, resistance and direct-current circuits.

#### 5. Pre-requirements for this course:

NA

#### 6. Co- requirements for this course:

NA

#### 7. Course Main Objective(s)

Recognize the fundamental of the electricity.

### 2. Teaching mode

No	Mode of Instruction	Contact Hours	Percentage
1.	Traditional classroom	3	100%
2.	E-learning		
3.	Hybrid <ul style="list-style-type: none"> <li>• Traditional classroom</li> <li>• E-learning</li> </ul>		
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	Define Coulomb's law, electric field, and potential of static charge.	K.1	Lectures Solve problems	Written test Reports Homework Quizzes
1.2	Describe electrical capacitance, resistance and current.	K.1		
2.0	Skills			
2.1	Apply Coulomb's law, electric field, and potential of static charge.	S.1	Lectures Solve problems.	Written test Reports Homework Quizzes
2.2	Solve problems in electrical capacitance, resistance and current.	S.1		
3.0	Values, autonomy, and responsibility			
3.1	Ability to self-learning independently.	V.2	Self-learning	Reports Presentation





## C. Course Content

No	List of Topics	Contact Hours
1.	<b>Electric Fields</b> 1. Coulomb's Law. 2. Particle in an Electric Field. 3. Electric Field of a Continuous Charge Distribution (one application).	4.5
2.	<b>Electric Fields</b> 4. Electric Field Lines. 5. Motion of a Charged Particle in a Uniform Electric Field.	4.5
3.	<b>Gauss's Law</b> 1. Electric Flux. 2. Gauss's Law. 3. One application only of Gauss's Law to Various Charge Distributions. 4. Conductors in Electrostatic Equilibrium.	4.5
4.	<b>Electric Potential</b> 1. Electric Potential and Potential Difference. 2. Potential Difference in a Uniform Electric Field. 3. Electric Potential and Potential Energy Due to Point Charges.	4.5
5.	<b>Electric Potential</b> 4. Obtaining the Value of the Electric Field from the Electric Potential. 5. Electric Potential Due to Continuous Charge Distributions (one application).	4.5
6.	<b>Capacitance and Dielectrics</b> 1. Definition of capacitance. 2. Calculating capacitance. 3. Combinations of capacitors.	4.5
7.	<b>Capacitance and Dielectrics</b> 4. Energy Stored in a charged capacitor. 5. Capacitors with dielectrics.	4.5
8.	<b>Current and Resistance</b> 1. Electric Current. 2. Resistance. 3. Resistance and Temperature. 4. Electrical Power.	4.5
9.	<b>Direct-Current Circuits</b> 1. Electromotive Force. 2. Resistors in Series and Parallel. 3. Kirchhoff's Rules.	4.5
10.	4. RC Circuits.	4.5
<b>Total</b>		<b>45</b>

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

	<b>Course Learning Outcomes</b>
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	1.1	1.2	2.1	2.2	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	Physics for Scientists and Engineers, 10th Edition, by Raymond A. Serway, John W. Jewett, BROOKS/COLE CENGAGE Learning, Boston USA, ASIN : B00E6TSR92, (2019).
Supportive References	Fundamentals of Physics Extended, 12th Edition, David Halliday, Robert Resnick, Jearl Walker, Wiley, 2021.
Electronic Materials	- Blackboard. - PowerPoint presentations. - Digital library of University of Bisha <a href="https://ub.deepknowledge.io/Bisha">https://ub.deepknowledge.io/Bisha</a>
Other Learning Materials	NA

### 2. Required Facilities and equipment

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





Items	Resources
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).
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

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

