



## Course Specification

## Course Specification

— (Bachelor)

Course Title: **Properties of matter**

Course Code: **MPHY26222**

Program: **Medical Physics**

Department: **Physics**

College: **Science**

Institution: **University of Bisha**

Version: **1**

Last Revision Date: 30 August 2023

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## A. General information about the course:

### 1. Course Identification

<b>1. Credit hours:</b>	2
<b>2. Course type</b>	
A. University <input type="checkbox"/>	College <input type="checkbox"/>
Department <input checked="" type="checkbox"/>	Track <input type="checkbox"/>
Others <input type="checkbox"/>	
B. Required <input checked="" type="checkbox"/>	Elective <input type="checkbox"/>
<b>3. Level/year at which this course is offered:</b>	4 <sup>th</sup> Level / 2 <sup>nd</sup> year
<b>4. Course general Description</b>	
This course introduces completely knowledge of properties of matter and the fundamental and general laws related to elasticity, pressure, buoyancy, surface tension and capillarity, fluid dynamics and molecular transport phenomena.	
<b>5. Pre-requirements for this course (if any):</b>	
NA	
<b>6. Co- requirements for this course (if any):</b>	
NA	
<b>7. Course Main Objective(s)</b>	
Recognize the fundamental properties of matter.	

### 1. Teaching mode (mark all that apply)

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

### 2. Contact Hours (based on the academic semester)

No	Activity	Contact Hours
1.	Lectures	30
2.	Laboratory/Studio	
3.	Field	
4.	Tutorial	
5.	Others (specify)	





Total	30
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## 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 the elasticity, pressure, buoyancy and surface tension.	K1	Lecturing	Quizzes Homework Midterm exam Final exam
1.2	Describe the fluid dynamics and molecular transport phenomena	K1		
2.0	Skills			
2.1	Solve problems in the stress, strain, pressure, buoyancy,	S1	Solve problems.	Quizzes Homework Midterm exam Final exam
2.2	Solve problems in the fluid dynamics, and molecular transport.	S1	Solve problems.	Quizzes Homework Midterm exam Final exam
3.0	Values, autonomy, and responsibility			
3.1	Exhibit self-learning skills independently.	V2	Self-learning	Reports Presentation

## C. Course Content

No	List of Topics	Contact Hours
1.	<b>Elasticity: Stress and Strain</b> - Tension and Compression - Shear Stress and Strain - Bulk Stress and Strain - Elasticity	4
2.	- Bulk Modulus: Volume Elasticity - Young's Modulus - Elasticity in Length - Shear Modulus: Elasticity of Shape	4
3.	- Hook's Law - Elastic Strain Energy - Bone Fracture: Energy Considerations	4
4.	<b>Pressure:</b> - Pressure - Density - Pascal's Principle	4





	- Measurement of Pressure - Pressure and the Human Body.	
5.	<b>Buoyancy</b> - Archimedes' principle - The Buoyant Force	4
6.	- The factors affect buoyant force - Applications of Buoyancy -hot air Balloon, ship and fishes-	4
7.	<b>Surface Tension and Capillarity</b> - Surface Tension - Capillarity - Surfactants and the Lung	4
8	<b>Fluid Dynamics of Non-viscous Fluids</b> - Definitions of Some Key Terms - The Equation of Continuity - Bernoulli's Equation	4
9	<b>Fluid Dynamics of Viscous Fluids</b> - Viscosity - Turbulence	4
10	<b>Molecular Transport Phenomena</b> - Diffusion - Osmosis - Applications to Biological Systems.	4
<b>Total</b>		<b>40</b>

## D. Students Assessment Activities

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

## E. Learning Resources and Facilities

### 1. References and Learning Resources

<b>Essential References</b>	Introduction to Biological Physics for the Health and Life Sciences, 2 <sup>nd</sup> Edition, by Kirsten Franklin et. All, Willey, 2019.
<b>Supportive References</b>	Physics for Scientists and Engineers, 10 <sup>th</sup> Edition, by Raymond A. Serway, John W. Jewett, BROOKS/COLE CENGAGE Learning, 2019.
<b>Electronic Materials</b>	- Blackboard.



	- PowerPoint presentations.
Other Learning Materials	NA

## 2. Required Facilities and equipment

Items	Resources
NA	NA
Technology equipment	Projector 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).
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.	1
DATE	5 September 2023

