

Course Syllabus

1	Course title	Physics for Life science students	
2	Course number	0302103	
3	Credit hours	3 hours	
	Contact hours (theory, practical)	3 theory	
4	Prerequisites/corequisites	None	
5	Program title	Bsc in Physics	
6	Program code	02	
7	Awarding institution	The University of Jordan	
8	School	Of Science	
9	Department	Physics	
10	Course level	First Year	
11	Year of study and semester(s)	2023/2024	
12	Other department(s) involved in teaching the course		
13	Main teaching language	English	
14	Delivery method	<input checked="" type="checkbox"/> Face to face learning <input type="checkbox"/> Blended <input type="checkbox"/> Fully online	
15	Online platforms(s)	<input checked="" type="checkbox"/> Moodle <input checked="" type="checkbox"/> Microsoft Teams <input type="checkbox"/> Skype <input type="checkbox"/> Zoom <input type="checkbox"/> Others.....	
16	Issuing/Revision Date	9/6/2024	

**17 Course Coordinator:**

Name:	Contact hours:
Office number:	Phone number:
Email:	

18 Other instructors:

Name:
Office number:
Phone number:
Email:
Contact hours:
Name:
Office number:
Phone number:
Email:
Contact hours:

19 Course Description:

Motion in a Straight Line, Motion in two Dimensions, Newton's Laws of Motion, STATICS, Work, Energy, and Power, Linear Momentum, Temperature and the Behavior of Gases, Thermodynamics, Thermal Properties of Matter, Electric Forces, Electric Fields, Electric Potentials, Direct Currents.



20 Course aims and outcomes:

A- Aims:

This course introduces students to fundamental phenomena in physics, with particular emphasis on applications to the biological sciences. Topics include: analyzing one- dimensional and two-dimensional motion; Newton's laws; momentum, energy, work, solving problems associated with conservation laws and introduces students to thermodynamics general laws.

In addition, this course aims to presents some selected principles and topics in physics with applications to a daily life. Another goal of this course is the enhancement of skills in quantitative analysis and problem solving among the students.

B- Students Learning Outcomes (SLOs):

For purposes of mapping the course SLOs to the physics program SLOs, at the successful completion of the physics program, graduates are expected to be able to:

SLO (1) Master professionally a broad set of knowledge concerning the fundamentals in the basic areas of physics: Quantum Mechanics, Classical Mechanics, Electrostatics and Magnetism, Thermal Physics, Optics, Theory of Special Relativity, Mathematical Physics, Electronics.

SLO (2) Apply knowledge of mathematics and fundamental concepts in the basic areas of physics to identify and solve physics related problems.

SLO (3) Utilize computers and available software in both data collections and data analysis.

SLO (4) Utilize standard laboratory equipment, modern instrumentation, and classical techniques to design and conduct experiments as well as to analyze and interpret data.

SLO (5) Develop a recognition of the need and ability to engage in life-long learning.

SLO (6) Demonstrate ability to use techniques, skills, and modern scientific tools necessary for professional practice.

SLO (7) Communicate clearly and effectively in both written and oral forms.

SLO (8) Apply proficiently team-work skills and employ team-based learning strategies.

SLO (9) Apply professional and ethical responsibility to society.

Upon successful completion of this course, students will be able to:

Program SLOs	SL								
Course SLOs	O	O	O	O	O	O	O	O	O
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1) Apply the basic laws of physics in the areas of classical mechanics,	✓	✓							

Newtonian mechanics and thermodynamics mechanics; needed for continuing success in life science disciplines majors.										
2) Recognize how observation, experiment and theory work together to continue to expand the frontiers of knowledge of the physical universe.	✓	✓								
3) Apply basic mathematical tools commonly used in physics, including vector algebra, basic calculus technique that are used to describe mechanics.	✓	✓								
4) To solve problems involving motion in one and two dimensions.	✓	✓								
5) Describe statics (equilibrium conditions) and the equilibrium of extended bodies, and the concept of torque balance.	✓	✓								
6) Explain the dynamics of heat and temperature.	✓	✓								
7) Explain the importance of the application of physics in life science.	✓	✓								

21. Topic Outline and Schedule:

Week	Lecture	Topic	Intended Learning Outcome	Learning Methods (Face to Face/Blended/ Fully Online)	Platform	Synchronous / Asynchronous Lecturing	Evaluation Methods	Resources
1	1.1	1.1 Measurements, Standards, Units, and Errors	3	Face to Face			Exams Discussion in the class	Textbook

	1.2	1.2 Displacement; Average Velocity	1, 3	Face to Face			Exams Discussion in the class	Textbook
	1.3	1.3 Instantaneous Velocity	1, 3	Face to Face			Exams Discussion in the class	Textbook
2	2.1	1.4 Acceleration	1, 3	Face to Face			Exams Discussion in the class	Textbook
	2.2	1.5 Finding The motion of an Object	1, 3	Face to Face			Exams Discussion in the class	Textbook
	2.3	1.6 The Acceleration of Gravity and Falling Objects	1, 3	Face to Face			Exams Discussion in the class	Textbook
3	3.1	2.1 Vectors and Scalars	1, 3-4	Face to Face			Exams Discussion in the class	Textbook
	3.2	2.2 Velocity in Two Dimension	1, 3-4	Face to Face			Exams Discussion in the class	Textbook
	3.3	2.3 Acceleration in Two Dimension	1, 3-4	Face to Face			Discussion in the class	Textbook

4	4.1	2.4 Finding the Motion of an Object	1, 3-4	Face to Face			Exams Discussion in the class	Textbook
	4.2	2.5 Projectiles	1, 3-4	Face to Face			Exams Discussion in the class	Textbook
	4.3	Problem Solving		Face to Face			Exams Discussion in the class	Textbook
5	5.1	3.1 Force, Weight, and Gravitational Mass	1, 3-4	Face to Face			Exams Discussion in the class	Textbook
	5.2	3.2 Newton's First Law of Motion	1, 3-4	Face to Face			Exams Discussion in the class	Textbook
	5.3	3.3 Equilibrium		Face to Face			Exams Discussion in the class	Textbook
6	6.1	3.4 Newton's Third Law of Motion	1, 3-4	Face to Face			Exams Discussion in the class	Textbook
	6.2	3.5 Newton's Second Law of Motion	1, 3-4	Face to Face			Exams Discussion in the class	Textbook
	6.3	3.6 The Significance of Newton's Laws of Motion	1, 3-4	Face to Face			Exams Discussion in the class	Textbook
7	7.1	3.7 Solving Problems with Newton's Laws: Free-	1, 3-4	Face to Face			Exams Discussion in the class	Textbook

		Body Diagrams							
	7.2	3.12 Friction	1, 3-4	Face to Face			Exams Discussion in the class	Textbook	
	7.3	3.13 Density	1, 3-4	Face to Face			Exams Discussion in the class	Textbook	
8	8.1	4.1 Torques	1, 3-4	Face to Face			Exams Discussion in the class	Textbook	
	8.2	4.2 Equilibrium of Rigid Bodies	1, 3-4	Face to Face			Exams Discussion in the class	Textbook	
	8.3	4.3 The Center of Gravity	1, 3-4	Face to Face			Exams Discussion in the class	Textbook	
9	9.1	6.1 Work	1, 3-4	Face to Face			Exams Discussion in the class	Textbook	
	9.2	6.2 Kinetic Energy	1, 3-4	Face to Face			Exams Discussion in the class	Textbook	
	9.3	6.3 Potential Energy and Conservative Forces	1, 3-4	Face to Face			Exams Discussion in the class	Textbook	
10	10.1	6.4 Dissipative Forces	1, 3-4	Face to Face			Exams Discussion in the class	Textbook	
	10.2	6.5 Observation	1, 3-4	Face to Face			Exams Discussion in the class	Textbook	

		of Work and Energy							
	10.3	6.6 Solving Problem Using Work and Energy	1, 3-4	Face to Face			Exams Discussion in the class	Textbook	
11	11.1	6.6 Solving Problem Using Work and Energy	1, 3-4	Face to Face			Exams Discussion in the class	Textbook	
	11.2	6.9 Power	1, 3-4	Face to Face			Exams Discussion in the class	Textbook	
	11.3	Problem Solving	1, 3-4	Face to Face			Exams Discussion in the class	Textbook	
13	13.1	7.1 Impulse and Linear Momentum	1, 3-4	Face to Face			Exams Discussion in the class	Textbook	
	13.2	7.2 Momentum Conservation	1, 3-4	Face to Face			Exams Discussion in the class	Textbook	
	13.3	7.3 Motion of a Center of Mass	1, 3-4	Face to Face			Exams Discussion in the class	Textbook	
14	14.1	7.4 Elastic and Inelastic Collision	1, 3-4	Face to Face			Exams Discussion in the class	Textbook	
	14.2	7.4 Elastic and Inelastic Collision	1, 3-4	Face to Face			Exams Discussion in the class	Textbook	
	14.3	Problem Solving	1, 3-4	Face to Face			Exams Discussion in the class	Textbook	

15	15.1	10.1 Temperature and Thermometers	1, 3, 5-6	Face to Face			Exams Discussion in the class	Textbook
	15.2	10.2 Molecular Masses	1, 3, 5-6	Face to Face			Exams Discussion in the class	Textbook
	15.3	10.3 Pressure	1, 3, 5-6	Face to Face			Exams Discussion in the class	Textbook
16	16.1	10.4 The Ideal Gas Law	1, 3, 5-6	Face to Face			Exams Discussion in the class	Textbook
	16.2	10.5 Gas Mixtures	1, 3, 5-6	Face to Face			Exams Discussion in the class	Textbook
	16.3	10.6 Temperature and Molecular Energies	1, 3, 5-6	Face to Face			Exams Discussion in the class	Textbook
17	17.1	10.7 Diffusion	1, 3, 5-6	Face to Face			Exams Discussion in the class	Textbook
	17.2	10.8 Dilute Solutions; Osmotic Pressure	1, 3, 5-6	Face to Face			Exams Discussion in the class	Textbook
	17.3	11.1 Mechanical Work	1, 3, 5-6	Face to Face			Exams Discussion in the class	Textbook
18	18.1	11.2 The First Law of	1, 3, 5-6	Face to Face			Exams Discussion in the class	Textbook

		Thermodynamics							
	18.2	Problem Solving	1, 3, 5-6	Face to Face			Exams Discussion in the class	Textbook	
	18.3	12.1 Thermal Expansion	1, 3, 5-6	Face to Face			Exams Discussion in the class	Textbook	
19	19.1	12.2 Heat Capacity	1, 3, 5-6	Face to Face			Exams Discussion in the class	Textbook	
	19.2	12.3 Phase Change	1, 3, 5-6	Face to Face			Exams Discussion in the class	Textbook	
	19.3	12.1 Thermal Expansion	1, 3, 5-6	Face to Face			Exams Discussion in the class	Textbook	

22 Evaluation Methods:

Opportunities to demonstrate achievement of the SLOs are provided through the following assessment methods and requirements:

Evaluation Activity	Mark	Topic(s)	SLOs	Period (Week)	Platform
First Exam	20%	Included Chapters: Chp. 1, Chp. 2 and Chp. 3	1-5	21/4/2024	Exam Builder
Midterm Exams	30%	Included Chapters: Chp. 4, Chp. 6 and Chp. 7	1-7	22/5/2024	Exam Builder
Final Exam	50%	All Materials	1-7	10/6/2024	Exam Builder

23 Course Requirements

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| 1) Audio-Visual Aids
2) Faculty member's Website
3) E-Learning Website |
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24 Course Policies:

A- Attendance policies:

Attendance is required per UJ regulations

B- Absences from exams and handing in assignments on time:

- a) Midterm and final exams make up are per UJ regulations, strictly
- b) Any task submitted after its announced deadline will be rejected regardless of any excuse

C- Health and safety procedures:

Any tampering with the PCs in any UJ computer lab are not tolerated and will be punished according to UJ regulations

D- Honesty policy regarding cheating, plagiarism, misbehavior:

All acts of plagiarism and or cheating are not tolerated and will be punished per UJ regulations.

E- Grading policy:

Mark Range	Grade
0-30	F
31-36	D ⁻
37-41	D
42-45	D ⁺

46-51	C ⁻
52-56	C
57-62	C+
63-67	B ⁻
68-73	B
74-79	B+
80-84	A ⁻
85-100	A

F- Available university services that support achievement in the course:

- 1) Faculty member's website
- 2) E-Learning website

A- Attendance policies:

B- Absences from exams and submitting assignments on time:

C- Health and safety procedures:

D- Honesty policy regarding cheating, plagiarism, misbehavior:

E- Grading policy:

F- Available university services that support achievement in the course:

25 References:

A- Required book (s), assigned reading and audio-visals:



Textbook:	“Physics”
	"Physics" edited by Joseph W. KANE and Morton M. STERNHEIM.
Recommended References:	
	<p>1. Raymond A. Serway and John W. Jewett Jr., “Physics For Scientists and Engineers with Modern Physics” 7th edition, (Thomson Learning, Belmont, CA, USA, 2007).</p> <p>2. David Halliday, Robert Resnick, and Jearl Walker, “Fundamentals Of Physics”, 5th edition, (Wiley, 1997).</p>

26 Additional information:

Name of Course Coordinator: -----	Signature: -----
Date: -----	
Head of Curriculum Committee/Department: -----	Signature: -----
Head of Department: -----	Signature: -----
Head of Curriculum Committee/Faculty: -----	Signature: -----
Dean: -----	Signature: -----