

Course Syllabus

1	Course title	General Physics-2
2	Course number	0302102
	Credit hours (theory, practical)	3 theory
3	Contact hours (theory, practical)	3 theory
4	Prerequisites/corequisites	No prerequisites
5	Program title	BSc. In Physics
6	Program code	
7	Awarding institution	The University of Jordan
8	Faculty	Faculty of Science
9	Department	Department of Physics
10	Level of course	1 st year
11	Year of study and semester (s)	2 nd Semester 2021/2022
12	Final Qualification	Bachelor
13	Other department (s) involved in teaching the course	-
14	Language of Instruction	English
15	Date of production/revision	January 2022/May 2022

16. Course Coordinator:

Dr. Hanan Sa'adeh Office hours: Announced on the website: <u>eacademic.ju.edu.jo/hanan.saadeh/default.aspx</u> Office Tel.: 065355000 Ext.: 22029 Email: <u>hanan.saadeh@ju.edu.jo</u>

17. Other instructors:

Faculty Members of the Department of Physics

18. Course Description:

Basic Principles of Electricity and Magnetism.

Electric Field, Gauss's Law; Electric Potential; Capacitance and Dielectrics; Current and Resistance; Direct Current Circuits, Magnetic Field, Sources of the Magnetic Field, Faraday's Laws of Induction.



19. Course aims and outcomes:

A- Aims:

- (1) Understanding the fundamental concepts in electricity and magnetism.
- (2) Utilizing physics concepts qualitatively as well as quantitatively.
- (3) To develop critical thinking and analytical problem-solving skills.
- (4) To gain an appreciation of how large a role electromagnetism plays in our daily life.

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

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:

B- Intended Learning Outcomes (ILOs):

Upon successful completion of this course students will be able to

Program SLOs Course SLOs	SLO (1)	SLO (2)	SLO (3)	SLO (4)	SLO (5)	SLO (6)	SLO (7)	SLO (8)	SLO (9)
1. Describe the ways in which various concepts in electromagnetism come into play in particular situations.	*	~							
2. Represent electromagnetic phenomena and fields mathematically.	~	~							

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3.	Understand and apply Coulomb's law, Gauss's law, Ohm's law, Kirchhoff's laws, Faraday's law, Lenz's law, etc.	•	•				
4.	Understand the relationship between electric and magnetic fields.	~	~				
5.	Use Calculus along with physical principles to effectively solve problems encountered in electricity and magnetism.	~	•				
6.	Apply knowledge of electrimagnetism to explain natural physical processes and related technological advances.	~	~				

20. Topic Outline and Schedule:

Week	Lecture	Торіс	Intende d Learnin g Outcom e	Learning Methods (Face to Face/Blended/ Fully Online)	Platform	Synchronou s / Asynchrono us Lecturing	Evaluation Methods	Resources
	1.1	Electric Charge and Electric Field	1-3, 5- 6	Face to Face			Electron ic exams	Textbook
1	1.2	Coulomb's Law	1-3, 5- 6	Face to Face			Electron ic exams	Textbook
	1.3	Electric Field and Electric Forces	1-3, 5- 6				Electron ic exams	Textbook
2	2.1	Electric-Field Calculations	1-3, 5- 6				Electron ic exams	Textbook
2	2.2	Electric Field Lines	1-3, 5- 6				Electron ic exams	Textbook



	2.3	Electric Dipoles	1-3, 5-		Electron	Textbook
			6		ic exams	
	2.1	Charge and	1-3, 5-		Electron	Textbook
	5.1	Electric Flux	6		ic exams	
2		Calculating	1-3, 5-		Electron	Textbook
3	3.2	Electric Flux	6		ic exams	
	2.2	Gauss's Law	1-3, 5-		 Electron	Textbook
	3.3		6		ic exams	
	4.1	Applications of	1-3, 5-		Electron	Textbook
	4.1	Gauss's Law	6		ic exams	
4		Charges on	1-3, 5-		Electron	Textbook
4	4.2	Conductors	6		ic exams	
	12	Problems solving	1-3, 5-		Electron	Textbook
	4.5		6		ic exams	
	5 1	Electric	1-3, 5-		Electron	Textbook
	5.1	Potential Energy	6		ic exams	
	5.2	Electric	1-3, 5-		Electron	Textbook
5		Potential	6		ic exams	
		Calculating	1-3, 5-		Electron	Textbook
	5.3	Electric	6		ic exams	
		Potential				
	6.1	Equipotential	1-3, 5-		Electron	Textbook
		Surfaces	6		ic exams	
6	6.2	Potential	1-3, 5-		Electron	Textbook
		Gradient	6		1c exams	
	6.3		1-3, 5-		Electron	Textbook
		Problems solving	6		ic exams	
	7.1	Capacitors and	1-3, 5-		Electron	Textbook
		Capacitance	6		1c exams	
_		Capacitors in	1-3, 5-		Electron	Textbook
7	7.2	Series and	6		1c exams	
		raranei				
	7.3	Energy Storage	1-3, 5-		Electron	Textbook
		in Capacitors	0		ic exams	



		and Electric-				
		Field Energy				
	8.1	Dielectrics	1-3, 5-		Electron	Textbook
	011		6		ic exams	
8	8.2	Dielectrics	1-3, 5-		Electron	Textbook
			6		1c exams	
	8.3		1-3, 5-		Electron	Textbook
		Problems solving	6		ic exams	
	9.1	Current	1-3, 5-		Electron	Textbook
			6		ic exams	
9	9.2	Resistivity	1-3, 5-		Electron	Textbook
			0		ic exams	
	9.3	Resistance	1-3, 5-		Electron	Textbook
			0			
	10.1	Electromotive	1-3, 5-		Electron ic exams	Textbook
	10.1	Circuits	0		пе ехапть	
			125		Electron	T (1 1
10	10.2	Energy and Power in	1-3, 5- 6		ic exams	Textbook
	10.2	Electric Circuits				
		Problems solving	1-3 5-		Electron	Textbook
	10.3	i roorenis sorving	6		ic exams	TEALOOOK
		Resistors in	1-3, 5-		Electron	Textbook
		Series and	6		ic exams	Tentooon
	11.1	Parallel				
		Kirchhoff's	1-3 5-		Electron	Textbook
11	11.2	Rules	6		ic exams	TOATOOOR
		Flectrical	1-3 5-		Flectron	Textbook
		Measuring	6		ic exams	TEALUOUK
	11.3	Instruments				
			125		Flootron	Taythoalt
12	12.1	<i>R-C</i> Circuits	1-3, 3- 6		ic exams	TEXIDOOK



		Power	1-3, 5-		Electron	Textbook	
	12.2	Distribution	6		ic exams		
		Systems					
	12.2		1-3, 5-		Electron	Textbook	
	12.5	Problems solving	6		ic exams		
	12.1	Magnetic Field	1-6		Electron	Textbook	
	13.1	6			ic exams		
		Magnetic Field	1-6		Electron	Textbook	
	13.2	Lines and	-		ic exams	I CHILO O O H	
13		Magnetic Flux					
		Motion of	1-6		Flectron	Textbook	
		Charged	1-0		ic exams	TEALUOUK	
	13.3	Particles in a					
		Magnetic Field					
		Applications of	1-6		Electron	Textbook	
		Motion of	10		ic exams	TEXIOOOK	
	14.1	Charged					
		Particles					
		Magnetic Force	1-6		Electron	Textbook	
14	14.2	on a Current-	1.0		ic exams	Tentooon	
		Carrying					
		Conductor					
		Force and	1-6		Electron	Textbook	
	14.3	Torque on a			ic exams		
		Current Loop					
		Magnetic Field	1-6		Electron	Textbook	
	15.1	of a Moving			ic exams	- 0.11000h	
		Charge					
		Magnetic Field	1-6		Electron	Textbook	
	15.2	of a Current			ic exams	ICALUUUK	
15		Element					
		Magnatic Field	1-6		Flectron	Taythook	
		of a Straight	1-0		ic exams	TEXIDOOK	
	15.3	Current-					
	_	Carrying					
		Conductor					



	16.1	Force Between Parallel Conductors	1-6		Electron ic exams	Textbook
16	16.2	Magnetic Field of a Circular Current Loop	1-6		Electron ic exams	Textbook
	16.3	Ampere's Law	1-6			Textbook
1	17.1	Induction Experiments	1-6		Electro nic exams	Textbook
17	17.2	Faraday's Law	1-6		Electro nic exams	Textbook
	17.3	Lenz's Law	1-6		Electro nic exams	Textbook
	18.1	Motional Electromotive Force	1-6		Electro nic exams	Textbook
18	18.2	Self-Inductance and Inductors	1-6		Electro nic exams	Textbook
	18.3	Magnetic-Field Energy	1-6		Electro nic exams	Textbook

21. Teaching Methods and Assignments:

Development of ILOs is promoted through the following <u>teaching and learning methods</u>: Lecturing Solving Problems Class Demonstrations

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%	Chapters: 21, 22, 23.	1, 2	6 th week	Exam Builder
Midterm Exam	30%	Chapters: 24, 25, 26.	1, 2	10 th week	Exam Builder
Final Exam	50%	All Chapters	1, 2	End of the semester	Exam Builder

23. Course Policies:

A- Attendance policies:

Class attendance is mandatory.

A student whose absence exceeds 15% of lectures will be dismissed.

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

Absence from exams without an acceptable excuse means ZERO.

No grades for homework assignments. Some suggested problems will be discussed in class for every chapter.

C- Health and safety procedures:

No special precautions.

D- Honesty policy regarding cheating, plagiarism, misbehavior:

All these issues will be considered according to the regulations and laws adopted at the University of Jordan.

E- Grading policy:

First Exam: 20%

Second Exam: 30%

Final Exam: 50%



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

Class Room, Some Office Toys, Library

24. Required equipment:

Textbook, Lecture Notes, Scientific Calculator.

25. References:

A- Required book (s), assigned reading and audio-visuals: "University Physics with Modern Physics" F. Sears & M. Zemansky's, 14th edition, (Pearson, Pearson Education Limited, 2016).

B- Recommended books, materials, and media:

1. Raymond A. Serway and John W. Jewett Jr., "Physics For Scientists and Engineers with Modern Physics", 9th edition, (Thomson Learning, Belmont, CA, USA, 2014).

2. David Halliday, Robert Resnick, and Jearl Walker, "EXTENDED PRINCPLES OF PHYSICS", 9th Edition (John Wiley & Sons, Inc., 2011).

3. Bauer Westfall, "University Physics with Modern Physics", (McGraw Hill, 2011).

4. James S. Walker, "Physics" Fourth Edition, (Addison - Wesley, 2010).

5. Giancoli, "Physics for Scientists & Engineers with Modern Physics", Fourth Edition, (Pearson Education, 2009).

6. Ohanian and Market, "Physics for Engineers and Scientists", Extended Third Edition, (W. W. Norton & Company, 2007).

26. Additional information:



Name of Course Coordinator: Dr. Hanan Sa'adeh	Signature:
Date: 14/5/2017. Head of curriculum committee/Depa	artment:
Signature: Head of Depart	tment:
Signature: Head of curricu	ulum committee/Faculty:
Signature:	

<u>Copy to:</u> Head of Department Assistant Dean for Quality Assurance Course File