Form: Course Syllabus	Form Number	EXC-01-02-02A
	Issue Number and Date	2/3/24/2022/2963 05/12/2022
	Number and Date of Revision or Modification	2023/10/15
	Deans Council Approval Decision Number	265/2024/24/3/2
	The Date of the Deans Council Approval Decision	2024/1/23
	Number of Pages	06

1.	Course Title	General Physics-2
2.	Course Number	0302102
3.	Credit Hours (Theory, Practical)	3 theory
	Contact Hours (Theory, Practical)	3 theory
4.	Prerequisites/ Corequisites	No prerequisites
5.	Program Title	BSc. In Physics
6.	Program Code	
7.	School/ Center	Faculty of Science
8.	Department	Department of Physics
9.	Course Level	1st year
10.	Year of Study and Semester (s)	Fall Semester 2024/2025
11.	Program Degree	BSc
12.	Other Department(s) Involved in Teaching the Course	-
13.	Learning Language	English
14.	Learning Types	☑ Face to face learning ☐Blended ☐Fully online
15.	Online Platforms(s)	☐Moodle ☑Microsoft Teams
16	Issuing Date	October 2025
17.	Revision Date	November 2025

18. Course Coordinator:

Name: Dr. Mohammad Hussein Contact hours: 11:30-12:30 Sunday, Tuesday and Thursday

Office number: Physics 008 Phone number: 065355000 Ext.: 22019

Email: m.hussein@ju.edu.jo

19. Other Instructors:

Faculty Members of the Department of Physics Noureddine Chair and Usama Al Khawaja

20. 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.

21. Program Intended Learning Outcomes: (To be used in designing the matrix linking the intended learning outcomes of the course with the intended learning outcomes of the program)

SO1: Identify, formulate, and solve broadly-defined technical or scientific problems by applying knowledge of Mathematics and Science and/or technical topics to areas relevant to the discipline.

SO2: Formulate or design a system, process, procedure or program to meet desired needs

SO3: Develop and conduct experiments or test hypotheses, analyze and interpret data and use scientific judgment to draw conclusions

SO4: Communicate effectively with a range of audiences in oral or written forms and exhibit ethical and professional values.

SO5: Reflect the impact of technical and/or scientific solutions in economic, environmental, and societal contexts.

SO6: Function effectively on teams that establish goals, plan tasks, meet deadlines, and analyze risk and uncertainty.

PILO's	*National Qualifications Framework Descriptors*		
	Competency (C)	Skills (B)	Knowledge (A)
1.	☐	☐	☒
2.	☐	☐	☒
3.	☐	☐	☒
4.	☐	☐	☒
5.	☐	☐	☒
6.	☐	☐	☒

* Choose only one descriptor for each learning outcome of the program, whether knowledge, skill, or competency.

22. Course Intended Learning Outcomes: (Upon completion of the course, the student will be able to achieve the following intended learning outcomes)

1. Describe the ways in which various concepts in electromagnetism come into play in particular situations.

2. Represent electromagnetic phenomena and fields mathematically.

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 electromagnetic to explain natural physical processes and related technological advances.

Course ILOs #	The learning levels to be achieved						Competencies
	Remember	Understand	Apply	Analyse	Evaluate	Create	
1.	✓	✓					
2.		✓	✓	✓	✓		
3.	✓	✓	✓	✓			
4.	✓	✓	✓	✓			

5.		✓	✓	✓	✓		
6.		✓	✓	✓	✓		

23. The matrix linking the intended learning outcomes of the course -CLO's with the intended learning outcomes of the program -PILOs:

PILO's * / CLO's	1	2	3	4	5	6	Descriptors**		
							A	B	C
1. Describe the ways in which various concepts in electromagnetism come into play in particular situations.	✓	✓					✓		
2. Represent electromagnetic phenomena and fields mathematically.	✓	✓					✓		
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 electromagnetism to explain natural physical processes and related technological advances.	✓	✓					✓		

***Linking each course learning outcome (CLO) to only one program outcome (PLO) as specified in the course matrix.**

****Descriptors are determined according to the program learning outcome (PLO) that was chosen and according to what was specified in the program learning outcomes matrix in clause (21).**

24. Topic Outline and Schedule:

Week	Lecture	Topic	ILO/s Linked to the Topic	Learning Types (Face to Face/ Blended/ Fully Online)	Platform Used	Synchronous / Asynchronous Lecturing	Evaluation Methods	Learning Resources
1	1.1	Electric Charge and Electric Field 21.3 Coulomb's Law 21.4 Electric Field and Electric Forces 21.5 Electric-Field Calculations 21.6 Electric Field Lines 21.7 Electric Dipoles	ILO (1,2,3,5)	Face To Face	Teams	Synchronous	Discussion	
	1.2		ILO (1,2,3,5)	Face To Face	Teams	Synchronous	Discussion	
	1.3		ILO (1,2,3,5)	Face To Face	Teams	Synchronous	Discussion	
2	2.1		ILO (1,2,3,5)	Face To Face	Teams	Synchronous	Discussion	
	2.2		ILO (1,2,3,5)	Face To Face	Teams	Synchronous	Discussion	
	2.3		ILO (1,2,3,5)	Face To Face	Teams	Synchronous	Discussion	
3	3.1	Gauss's Law	ILO (1,2,3,5)	Face To Face	Teams	Synchronous	Discussion	

	3.2	22.1 Charge and Electric Flux	ILO (1,2,3,5)	Face To Face	Teams	Synchronous	Discussion	
	3.3	22.2 Calculating Electric Flux 22.3 Gauss's Law 22.4 Applications of Gauss's Law 22.5 Charges on Conductors	ILO (1,2,3,5)	Face To Face	Teams	Synchronous	Discussion	
4	4.1	Electric Potential 23.1 Electric Potential Energy	ILO (1,2,3,5)	Face To Face	Teams	Synchronous	Discussion	
	4.2		ILO (1,2,3,5)	Face To Face	Teams	Synchronous	Discussion	
	4.3	23.2 Electric Potential 23.3 Calculating Electric Potential	ILO (1,2,3,5)	Face To Face	Teams	Synchronous	Discussion,	
5	5.1		ILO (1,2,3,5)	Face To Face	Teams	Synchronous	Discussion	
	5.2	23.4 Equipotential Surfaces	ILO (1,2,3,5)	Face To Face	Teams	Synchronous	Discussion	
	5.3	23.5 Potential Gradient	ILO (1,2,3,5)	Face To Face	Teams	Synchronous	Discussion	
6	6.1	Capacitance and Dielectrics 24.1 Capacitors and Capacitance	ILO (1,2,3,5)	Face To Face	Teams	Synchronous	Discussion	
	6.2		ILO (1,2,3,5)	Face To Face	Teams	Synchronous	Discussion	
	6.3	24.2 Capacitors in Series and Parallel 24.3 Energy Storage in Capacitors and Electric-Field Energy 24.4 Dielectrics	ILO (1,2,3,5)	Face To Face	Teams	Synchronous	Discussion	

7	7.1	Current, Resistance, and Electromotive Force 25.1 Current 25.2 Resistivity 25.3 Resistance 25.4 Electromotive Force and Circuits 25.5 Energy and Power in Electric Circuits Direct-Current Circuits 26.1 Resistors in Series and Parallel 26.2 Kirchhoff's Rules 26.4 R-C Circuits	ILO (1,2,3,5)	Face To Face	Teams	Synchronous	Discussion	
	7.2		ILO (1,2,3,5)	Face To Face	Teams	Synchronous	Discussion	
	7.3		ILO (1,2,3,5)	Face To Face	Teams	Synchronous	Discussion	
8	8.1	Magnetic Field and Magnetic Forces 27.1 Magnetism 27.2 Magnetic Field 27.3 Magnetic Field Lines and Magnetic Flux 27.4 Motion of Charged Particles in a Magnetic Field 27.5 Applications of Motion of Charged Particles 27.6 Magnetic Force on a Current-Carrying Conductor	ILO(1-6)	Face To Face	Teams	Synchronous	Discussion	
	8.2		ILO(1-6)	Face To Face	Teams	Synchronous	First exam	
	8.3		ILO(1-6)	Face To Face	Teams	Synchronous	Discussion	

		27.7 Force and Torque on a Current Loop						
9	9.1	Sources of Magnetic Field 28.1 Magnetic Field of a Moving Charge 28.2 Magnetic Field of a Current Element 28.3 Magnetic Field of a Straight Current-Carrying Conductor 28.4 Force Between Parallel Conductors 28.5 Magnetic Field of a Circular Current Loop 28.6 Ampere's Law 28.7 Applications of Ampere's Law	ILO(1-6)	Face To Face	Teams	Synchronous	Discussion	
	9.2		ILO(1-6)	Face To Face	Teams	Synchronous	Discussion	
	9.3		ILO(1-6)	Face To Face	Teams	Synchronous	Discussion, homework	
10	10.1	Electromagnetic Induction 29.1 Induction Experiments 29.2 Faraday's Law 29.3 Lenz's Law 29.4 Motional Electromotive Force	ILO(3-6)	Face To Face	Teams	Synchronous	Discussion	
	10.2		ILO(3-6)	Face To Face	Teams	Synchronous	Discussion	
	10.3		ILO(3-6)	Face To Face	Teams	Synchronous	Discussion, homework	
11	11.1	Inductance 30.2 Self-Inductance and Inductors 30.3 Magnetic-Field Energy	ILO(3-6)	Face To Face	Teams	Synchronous	Discussion	
	11.2		ILO(3-6)	Face To Face	Teams	Synchronous	Discussion	
	11.3		ILO(3-6)	Face To Face	Teams	Synchronous	Discussion	

12	12.1	30.4 The R-L Circuit Alternating Current 31.1 Phasors and Alternating Currents 31.2 Resistance and Reactance 31.3 The L-R-C Series Circuit 31.4 Power in Alternating-Current Circuits	ILO(3-6)	Face To Face	Teams	Synchronous	Discussion	
	12.2		ILO(3-6)	Face To Face	Teams	Synchronous	Second exam	
	12.3		ILO(3-6)	Face To Face	Teams	Synchronous	Discussion	
13	13.1	The Nature and Propagation of Light 33.1 The Nature of Light 33.2 Reflection and Refraction 33.3 Total Internal Reflection	ILO(3-6)	Face To Face	Teams	Synchronous	Discussion	
	13.2		ILO(3-6)	Face To Face	Teams	Synchronous	Discussion	
	13.3		ILO(3-6)	Face To Face	Teams	Synchronous	Discussion, homework	
14	14.1	Geometric Optics 34.1 Reflection and Refraction at a Plane Surface 34.4 Thin Lenses 34.7 The Magnifier	ILO(3-6)	Face To Face	Teams	Synchronous	Discussion	
	14.2		ILO(3-6)	Face To Face	Teams	Synchronous	Discussion	
	14.3		ILO(3-6)	Face To Face	Teams	Synchronous	Discussion	
15	15.1	Review	ILO(1-6)	Face To Face	Teams	Synchronous	Discussion	
	15.2	Review	ILO(1-6)	Face To Face	Teams	Synchronous	Discussion	
	15.3	Review	ILO(1-6)	Face To Face	Teams	Synchronous	Final exam	

25. Evaluation Methods:

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

Evaluation Activity	*Mark wt.	CILO's					
		1	2	3	4	5	6
First Exam	30%	✓	✓	✓	✓	✓	
Second Exam	20%			✓	✓	✓	✓
Final Exam	50%	✓	✓	✓	✓	✓	✓
Total 100%	100%						

*** According to the instructions for granting a Bachelor's degree.**

****According to the principles of organizing semester work, tests, examinations, and grades for the bachelor's degree.**

First exam specifications table*

	No. of questions/ cognitive level						No. of questions per CLO	Total exam mark	Total no. of questions	CILO/ Weight	CILO no.
	Create **%10**	Evaluate **%10**	analyse **%10**	Apply %20	Understand **%20**	Remember %30					
		1			1	1	3	100	15	20%	1
		1		1		1	3	100	15	20%	2
		1		1		1	3	100	15	20%	3
	1			1		1	3	100	15	20%	4
		1		1		1	3	100	15	20%	5
											6

Final exam specifications table

	No. of questions/ cognitive level						No. of questions per CLO	Total exam mark	Total no. of questions	CILO/ Weight	CILO no.
	Create **%10**	Evaluate **%10**	analyse **%10**	Apply %20	Understand **%20**	Remember %30					
		1			1	1	3	100	20	15%	1
		1		1		1	3	100	20	15%	2
		1		1		1	3	100	20	15%	3

	1			1		1	3	100	20	15%	4
		1	1	1		1	4	100	20	20%	5
	1		1	1		1	4		20	20%	6

26. Course Requirements:

(e.g.: students should have a computer, internet connection, webcam, account on a specific software/platform…etc.):

The students are expected to have internet connection and a calculator

27. Course Policies:

A- Attendance policies:

Students are expected to attend all class sessions. If a student cannot attend a class session, the teacher must be notified prior to that. For the university's rules and regulations, the student's total absences must not exceed 15 % of the total class hours. Please refer to the University of Jordan student Handbook for further explanation.

B- Absences from exams and submitting assignments on time:

a. Failure in attending a course exam other than the final exam will result in zero mark unless the student provides an official acceptable excuse to the instructor who approves a make up exam.
b. Failure in attending the final exam will result in zero mark unless the student presents an official acceptable excuse to the Dean of his/her faculty who approves an incomplete exam, normally scheduled to be conducted during the first two weeks of the successive semester.

C- Health and safety procedures:

We don't have any policy at the moment considering the safety procedures, nevertheless, the instructor in each session has to give a general safety instructions for the student.

D- Honesty policy regarding cheating, plagiarism, misbehavior:

Cheating, plagiarism, misbehavior are attempts to gain marks dishonestly and includes; but not limited to:

- Copying from another student's work.
- Using materials not authorized by the institute.
- Collaborating with another student during a test, without permission.
- Knowingly using, buying, selling, or stealing the contents of a test.
- Plagiarism which means presenting another person's work or ideas as one's own, without attribution.
- Using any media (including mobiles) during the exam.

E- Grading policy:

Grades will be awarded based on the statistical distribution of marks out of 100%

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

- Faculty members website

E-Learning website

28. References:

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

- "University Physics with Modern Physics" Hugh D. Young and Roger A. Freedman, 15th edition, (Pearson, Pearson Education Limited, 2020).

B- Recommended books, materials, and media:

- Raymond A. Serway and John W. Jewett Jr., "Physics For Scientists and Engineers with Modern Physics", 10th edition, (Thomson Learning, Belmont, CA, USA, 2019).

29. Additional information:

Name of the Instructor or the Course Coordinator: …… Mohammad Hussein ……	Signature: 	Date: 27/11/2025 Date:
Name of the Head of Quality Assurance Committee/ Department ……	Signature: ……..……	……..……
Name of the Head of Department ……	Signature: ……..……	Date: ……..……
Name of the Head of Quality Assurance Committee/ School or Center ……	Signature: ……..……	Date: ……..……
Name of the Dean or the Director ……	Signature: ……..……	Date: ……..……