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	PHYSICS FOR COMPUTER SCIENCE STUDENTS
2.	Course Number	**0302108**
3.	Credit Hours (Theory, Practical)	3 theory
	Contact Hours (Theory, Practical)	3 theory
4.	Prerequisites/ Corequisites	**None**
5.	Program Title	BSc. In Physics
6.	Program Code	
7.	School/ Center	Faculty of Science
8.	Department	Department of Physics
9.	Course Level	First year Students
10.	Year of Study and Semester (s)	First Semester 2025/2026
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	February 2025
17.	Revision Date	June 2025

18. Course Coordinator:

Name: Dr. Ola Hassouneh Contact hours: 10:30-11:30 Monday, Tuesday and Wednesday

Office number: Phone number: 065355000 Ext.: 22043

Email: O.hassouneh@ju.edu.jo.

19. Other Instructors:

Faculty Members of the Department of Physics

20. Course Description:

This course is designed for first year computer science students. An introduction to physical quantities and their applications for motion, forces, and fields is offered. Potentials and energy concepts are used to define electrical currents and their interactions with resistors and capacitors. The acquired knowledge is then used to develop the basics of circuit theory (using resistors and capacitors networks). AC- circuits concepts are treated briefly (RC-circuit). The pn-junction will be defined and their use as diodes and transistors with some applications is treated. Characteristics of diodes and transistors will be studied and explained.

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.

A- Aims: To give students a proper background on the basic physics behind motion, forces fields and their applications in simple linear circuits and in circuits with diodes and transistors. The lab will give the students a hands-on experience that covers the ideas discussed in class.

B- Intended Learning Outcomes (ILOs): Upon successful completion of this course students will be able to …

1. Tell the difference between scalars and vectors and Use vectors in calculations; vector representation, vector addition and subtraction, and vector components.
2. Describe one- and two-dimensional motions, using appropriate kinematic equations.
3. Understand Newton's three Laws of Motion and related applications, with special emphasis on the free-body diagram.
4. Delineate the relationship between work, energy, and power.
5. Solve elementary problems encountered in everyday life.
6. Demonstrate the ability to think critically and to use appropriate concepts to analyze qualitatively problems or situations involving the fundamental principles of physics.
7. Calculate electric force, field and electric potential for different charge configurations system.
8. State and apply the relation between electric force, electric field and electric potential.
9. Understand and apply Coulomb's law, Ohm’s law, Kirchhoff’s laws and RC-circuits.
10. Calculate the capacitance in parallel and series.

Course ILOs #	The learning levels to be achieved						Competencies
	Remember	Understand	Apply	Analyse	Evaluate	Create	
1.	✓	✓	✓				
2.		✓	✓	✓	✓		
3.	✓	✓	✓	✓			
4.	✓	✓	✓	✓			
5.		✓	✓	✓	✓		
6.		✓	✓	✓	✓		
7.	✓	✓	✓				
8.	✓	✓	✓				

9.	✓	✓	✓	✓			
10.	✓	✓	✓				

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.	✓	✓					✓		
2.	✓	✓					✓		
3.	✓	✓					✓		
4.	✓	✓					✓		
5.	✓						✓		
6.	✓	✓					✓		
7.	✓	✓							
8.	✓	✓							
9.	✓	✓							
10.	✓	✓							

***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).**

Chapter	# of hours	Content	Suggested Exercises & Problems	Achieved ILO's
1	**2**	**Vectors** 1.7 Vectors and Vector Addition 1.8 Components of Vectors 1.9 Unit Vectors 1.10 Product of Vectors	26, 29, 33, 36, 42, 43, 60, 81	1,5,6
2 and 3	**4**	**Motion Along A Straight Line** 2.1 Displacement, Time, Average Velocity 2.2 Instantaneous Velocity 2.3 Average and Instantaneous Acceleration 2.4 Motion with Constant Acceleration 2.5 Feely Falling Bodies	1, 4, 8, 14, 19, 31, 35, 42, 49, 53, 70	1,2,5,6

		3.1 Position and velocity vectors 3.2 The acceleration Vector		
4 & 5	**4**	**Newton's Laws of Motion** 4.1 Force and Interaction 4.2 Newton's First Law 4.3 Newton's Second Law 4.4 Mass and Weight 4.4 Newton's Third Law 4.6 Free Body Diagram 5.1 Using Newton's First Law: Particles in Equilibrium 5.2 Using Newton's Second Law: Dynamic of Particles 5.3 Frictional Forces	Ch 4: 2,7,16,23, 28, 31, 40, 49 Ch 5: 1, 7, 9, 15, 20, 27, 37, 45, 50, 65, 74	1, 2, 3,5,6
6 & 7	**4**	**Work and Kinetic Energy** 6.1 Work 6.2 Kinetic Energy and the Work- Energy Theorem 6.3 Work Done by a Varying Force 6.4 Power 7.1 Gravitational Potential Energy	Ch 6: 1, 8, 16, 20, 24, 36, 50, 51, 62, 71, 79 Ch 7: 1, 9, 21, 27, 30, 33	1, 2, 4,5,6
21	**4**	**Electric Charge and Electric Field** 21.3 Coulomb's Law 21.4 Electric Field and Electric Forces	9, 13, 16, 23, 29, 51, 48, 65	5,6,7
23	**2**	**Electric Potential** 23.1 Electric Potential Energy 23.2 Electric Potential 23.3 Calculating Electric Potential 23.4 Equipotential Surfaces	7, 8, 26, 37, 43, 68	5,6,7,8
24	**2**	**Capacitance and Dielectrics** 24.1 Capacitors and Capacitance 24.2 Capacitors in Series and Parallel	1, 17, 20, 33	5,6,9,10
25	**2**	**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	2, 7, 20, 38	5,6,9,10
26	**2**	**Direct-Current Circuits** 26.1 Resistors in Series and Parallel 26.2 Kirchhoff's Rules 26.3 Electrical Measuring Instruments ***(Self-Reading)*** 26.4 *R-C* Circuits	4, 18, 23, 28, 39, 49, 68	5,6,9,10

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.**

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, F. Sears & M. Zemansky's, **14th edition**, (Pearson, Pearson Education Limited, 2016).

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: …OLA HASSOUNEH……	Signature: … …	Date: 24/2/2025
Name of the Head of Quality Assurance Committee/ Department ……	Signature: ……..……	Date: ……..……
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: ……..……