Course Syllabus

1	**Course title**	**Physics for Computer Science Students**	
2	**Course number**	**0302108**	
3	**Credit hours**	**2 credit hours per week**	
	Contact hours (theory, practical)	**theory**	
4	**Prerequisites/corequisites**		
5	**Program title**	**Bachelor in Physics**	
6	**Program code**	**02**	
7	**Awarding institution**	**The University of Jordan**	
8	**School**	**Science**	
9	**Department**	**Physics**	
10	**Course level**	**First year**	
11	**Year of study and semester(s)**	**2022/ first semester**	
12	**Other department(s) involved in teaching the course**	**Non**	
13	**Main teaching language**	**English**	
14	**Delivery method**	**☒Face to face learning ☐Blended ☐Fully online**	
15	**Online platforms(s)**	**☐Moodle ☒Microsoft Teams ☐Skype ☐Zoom ☐Others……**	
16	**Issuing/Revision Date**	**8/10/2022**	

17 Course Coordinator:

Name: Ola Hassouneh	**Contact hours: 2 hours**
Office number:	**Phone number:**
Email: o.hassouneh@ju.edu.jo	

18 Other instructors:

Name:

Office number:

Phone number:

Email:

Contact hours:

Name:

Office number:

Phone number:

Email:

Contact hours:

19 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.

20 Course aims and outcomes:

A- Aims:

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. Understand the basic conservation laws (of energy only) and calculate gravitational potential energy.
6. Solve elementary problems encountered in everyday life.
7. Demonstrate the ability to think critically and to use appropriate concepts to analyze qualitatively problems or situations involving the fundamental principles of physics.
8. Calculate electric force, field and electric potential for different charge configurations system.
9. State and apply the relation between electric force, electric field and electric potential.
10. Understand and apply Coulomb's law, Ohm's law, Kirchhoff's laws and RC-circuits.
11. Calculate the capacitance in parallel and series.

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.

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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 / Course SLOs	SLO (1)	SLO (2)	SLO (3)	SLO (4)	SLO (5)	SLO (6)	SLO (7)	SLO (8)	SLO (9)
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. Knowing the relationship between work, energy, and power.	✓								
5. Understand the basic conservation laws (of energy only) and calculate gravitational potential energy.	✓								

6. Solve elementary problems encountered in everyday life.		✓							
7. Demonstrate the ability to think critically and to use appropriate concepts to analyze qualitatively problems or situations involving the fundamental principles of physics.		✓			✓				
8. Calculate electric force, field and electric potential for different charge configurations system.	✓								
9. State and apply the relation between electric force, electric field and electric potential.	✓								
10. Understand and apply Coulomb's law, Ohm's law, Kirchhoff's laws and RC-circuits.	✓								
11. Calculate the capacitance in parallel and series.	✓								

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	1-2	vectors	1,2,6,7	Face to Face		Synchronous learning	Written exams and Quizzes	Course book
2	2-3	1D motion and forces	1,2,6,7	Face to Face		Synchronous learning	Written exams and Quizzes	Course book
Week	Lecture	Topic	Intended Learning Outcome	Learning Methods (Face to Face/Blended/ Fully Online)	Platform	Synchronous / Asynchronous Lecturing	Evaluation Methods	Resources
4	1-2	Motion in tow Dimension	2,6,7	Face to Face		Synchronous	Written exams and Quizzes	Course book
	1-4	Newton's Laws of Motion	3,6,7			Synchronous		Course book

5 and 6				**Face to Face**			**Written exams and Quizzes**	
7	**1-3**	**Work and Kinetic Energy**	**4,5,6,7**	**Face to Face**		**Synchronous**	**Written exams and Quizzes**	**Course book**
8	**1-2**	**Electric Charge and Electric Field**	**8,6,7**	**Face to Face**		**Synchronous**	**Written exams and Quizzes**	**Course book**
9	**1-2**	**Gauss Law**	**8,6,7**	**Face to Face**		**Synchronous**	**Written exams and Quizzes**	**Course book**
10	**1-2**	**Electric Potential**	**8,6,7**	**Face to Face**		**Synchronous**	**Written exams and Quizzes**	**Course book**
11	**1-2**		**6,7,8,9,11**	**Face to Face**		**Synchronous**	**Written exams and Quizzes**	**Course book**

		Capacitance and Dielectrics						
12	**1-2**	**Current, Resistance, and Electromotive Force**	**6,7,10**	**Face to Face**		**Synchronous**	**Written exams and Quizzes**	**Course book**
13	**1-2**	**Direct-Current Circuits**	**6,7,10**	**Face to Face**		**Synchronous**	**Written exams and Quizzes**	**Course book**

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	30%	Ch# 1,2,3	SLO (1) &(2)	Week 5	
Second Exam	20%	Ch#4,5,21,22,23	SLO (1) &(2)	Week 8	
Final Exam	50%	All course content	SLO (1) &(2)	Week 15	

23 Course Requirements

students should have a computer, internet connection, webcam, account on a Microsoft Teams

24 Course Policies:

A- Attendance policies: No more than 15 % of classes can be missed under any circumstances. The students are assumed to be on time for each class and for each lab session and will not be admitted after 10 minutes from the starting time.

B- Absences from exams and submitting assignments on time:
Only allowed if there is a medical approved report from The university of Jordan Hospital. Assignments are only taken if submitted on time

C- Health and safety procedures:
The class room prepared such that they do not pose any hazards to the students or the instructors.

D- Honesty policy regarding cheating, plagiarism, misbehavior: Any act of cheating or plagiarism is not tolerated and the students are clearly required to submit their own work.

E- Grading policy:

The grading for this course is based on: (30% first exam, 20% second exam, 50% final exam)

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

a proper library and very well furnished labs.

25 References:

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

1.University Physics, Sears and Zemansky, 14th Edition, 2016.

B- Recommended books, materials, and media:

1. Physics for Scientists and Engineers. Jewett and Serway (any edition).

2. Electronic Devices, Thomas Floyd, 9th Edition. (Selected subjects only).

C. E-Learning website: https://elearning.ju.edu.jo/course/view.php?id=17600

26 Additional information:

Name of Course Coordinator: -Ola Hassouneh Signature: ---------- Date: ---8/10/2022-----
Head of Curriculum Committee/Department: ---------- Signature: ----------
Head of Department: ---------- Signature: ----------
Head of Curriculum Committee/Faculty: ---------- Signature: ----------
Dean: ---------- Signature: ----------