Course E-Syllabus

1	**Course title**	General physics 1
2	**Course number**	5501103
3	**Credit hours**	3 credit hours
	Contact hours (theory, practical)	3 hours theory/week
4	**Prerequisites/corequisites**	--
5	**Program title**	General Biology
6	**Program code**	5501
7	**Awarding institution**	University of Jordan/Aqaba
8	**School**	School of Basic and Marine Sciences
9	**Department**	General Biology
10	**Level of course**	1st and 2nd years
11	**Year of study and semester (s)**	Summer semester 2019/2020
12	**Final Qualification**	Bachelor Degree
13	**Other department (s) involved in teaching the course**	--
14	**Language of Instruction**	English
15	**Teaching methodology**	☐Blended ☒Online
16	**Electronic platform(s)**	☒Moodle ☒Microsoft Teams ☐Skype ☒Zoom ☒Others: Facebook, E-mail
17	**Date of production/revision**	

18 Course Coordinator:

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19 Other instructors:

Name:
Office number:
Phone number:
Email:

Name:
Office number:
Phone number:
Email:

20 Course Description:

This course forms an introductory subject in mechanics. It includes the following topics:

- Physical units and physical quantities. - Introduction to vectors. - Motion along a straight line. - Motion in two or three dimensions. - Newton's laws of motion. - Applying Newton's laws. - Work and kinetic energy - Potential energy and energy conservation - Momentum, impulse and collisions. - Rotation of rigid bodies.

21 Course aims and outcomes:

A- Aims:

1. Correctly use units, unit conversions and significant figures in measurements and calculations, and distinguish between Metric and English system of units.
2. Apply kinematic equations to calculate distance, time or velocity under the conditions of constant acceleration including free fall.
3. Recognize the difference between scalar and vector quantities, and express vectors in component form. Add two or more vectors together.
4. Apply kinematic equations and vector methods to solve problems involving objects projected horizontally and at an angle.
5. Apply Newton's laws, free-body diagrams and vector methods to solve one and two-dimensional problems related to objects in equilibrium and accelerating objects including objects in uniform circular motion. Forces include gravitational force, spring force (Hooke's Law), friction, normal force, tension and buoyant force.
6. Solve problems based on the work-energy theorem and conservation of energy including frictional energy loss, kinetic energy, gravitational and spring potential energy.
7. Solve one and two dimensional problems involving elastic and inelastic collisions.
8. Solve problems related to centripetal force, moment of inertia and angular momentum.

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B- Intended Learning Outcomes (ILOs):

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

- Students will be able to analyze and solve problems related to a variety of physical systems and situations.
- Students will be able to identify displacement, distance traveled, speed, velocity, and acceleration in various scenarios
- Students will be able to calculate the motion of a particle in one, or two dimensions, subject to forces.
- Students will be able to determine the net force acting on an object and the acceleration it produces.
- Students will be able to calculate the motion of particles using the conservation of energy to discuss real life situations.
- Students will be able to analyze the collision of two particles using the conservation of momentum.
- Students will be able to recognize the difference between the scientific and ordinary definitions of work. Understand work-energy theorem, conservation of energy, and power.
- Students will be able to explain centripetal force, moment of inertia and angular momentum. Understand how angular momentum conservation plays an important role certain real life situations.

22. Topic Outline and Schedule:

Week	Lecture	Topic	Teaching Methods*/platform	Evaluation Methods**	References
1	5	**Units, Physical Quantities and Vectors** 1.7: Vectors and Vector Addition 1.8: Components of Vectors 1.9: Unit Vectors 1.10: Product of Vectors	Zoom. Messenger, Microsoft team, E-mail	Homework, Quiz	University Physics with Modern Physics Authors: F. Sears and M. Zemansky Edition: Thirteenth Publisher: Pearson Education Limited
2	5	**Motion Along a Straight Line** 2.1: Displacement, Time and Average Velocity 2.2: Instantaneous Velocity 2.3: Average and Instantaneous Acceleration 2.4: Motion With Constant Acceleration 2.5: Freely Falling Bodies 2.6: Velocity and Position by Integration	Zoom. Messenger, Microsoft team, E-mail	Homework	
3	5	**Motion in Two or Three Dimensions** 3.1: Position and Velocity Vectors 3.2: The Acceleration Vector 3.3: Projectile Motion 3.4: Motion in a Circle	Zoom. Messenger, Microsoft team, E-mail	Homework, Quiz,	

4	5	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 4.5: Newton's Third Law 4.6: Free-Body Diagrams	Zoom. Messenger, Microsoft team, E-mail	Homework, report		
5	5	**Applying Newton's Laws** 5.1: Using Newton's First Law: Particles in Equilibrium 5.2: Using Newton's Second Law: Dynamics of Particles 5.3: Frictional Forces 5.4: Dynamics of Circular Motion 5.5: The Fundamental Forces of Nature	Zoom. Messenger, Microsoft team, E-mail	Homework		
6	5					
7	5	**Work and Kinetic Energy** 6.1: Work 6.2: Kinetic Energy and the Work-Energy Theorem 6.3: Work and Energy with Varying Force 6.4: Power	Zoom. Messenger, Microsoft team, E-mail	Homework, Quiz		
8	5	**Potential Energy and Energy Conservation** 7.1: Gravitational Potential Energy 7.2: Elastic Potential Energy 7.3: Conservative and Non-	Zoom. Messenger, Microsoft team, E-mail	Homework, report		

		Conservative Forces 7.4: Force and Potential Energy			
9	5	**Momentum, Impulse and Collisions** 8.1: Momentum and Impulse 8.2: Conservation of Momentum 8.3: Momentum Conservation and Collisions 8.4: Elastic Collisions 8.5: Center of Mass (No Integrals)	Zoom. Messenger, Microsoft team, E-mail	Homework	
10	5	**Rotation of Rigid Bodies** 9.1: Angular Velocity and Angular Acceleration 9.2: Rotation with Constant Angular Acceleration 9.3: Relating Linear and Angular Kinematics 9.4: Energy in Rotational Motion 9.5: Parallel-Axis Theorem	Zoom. Messenger, Microsoft team, E-mail	Homework	

- Teaching methods include: Synchronous lecturing/meeting; Asynchronous lecturing/meeting
- Evaluation methods include: Homework, Quiz, Exam, pre-lab quiz…etc

23 Evaluation Methods:

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

Evaluation Activity	Mark	Topic(s)	Period (Week)	Platform
Homeworks	15%	All topics in syllabus	All weeks	Zoom. Microsoft team, Messenger, e-mail
Quiz 1	5%	Units, Physical Quantities and Vectors	2	Zoom. Microsoft team, Messenger, e-mail
Report 1	10%	Newton's Laws of Motion	3	Zoom. Microsoft team, Messenger, e-mail
Quiz 2	5%	Motion in Two or Three Dimensions	4	Zoom. Microsoft team, Messenger, e-mail
Report 2	10%	Potential Energy and Energy Conservation	7	Zoom. Microsoft team, Messenger, e-mail
Quiz 3	5%	Work and Kinetic Energy	8	Zoom. Microsoft team, Messenger, e-mail
Final exam	50%	All topics in the course	10	Zoom. Microsoft team, Messenger, e-mail

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

Computer/smart phone, internet

25 Course Policies:

A- Attendance policies:
As you will see below, attendance counts as a small portion of your final grade in this class. These are basically free points that I am offering as an incentive for you to learn the good habit of attending class. If you miss more than 5 classes, you must drop the course, or receive an F. A sign-in sheet or equivalent will be used at each class session and each student is responsible to sign in.

B- Absences from exams and handing in assignments on time:
Failure to attend class on the day an assignment is given or due does not mean that you may turn it in late without penalty. There will be no makeup quizzes, though your lowest quiz score for the semester will be dropped. If you miss a scheduled test, then you will be given a 0 for that test unless you give an acceptable excuse within three days.
Heaven forbid that you have a catastrophe this semester that keeps you out of class, but if you do, please contact the office of the Associate Dean of Students to get it documented. After I am notified by the Dean's office I will make the final determination whether you get an excused absence or a zero for any late or missed material.

C- Honesty policy regarding cheating, plagiarism, misbehavior:
Cheating and plagiarism will not be tolerated at all. If any work you turn in is found not to be entirely your own, unless previously permitted, the work will not be accepted and no credit will be awarded for the work. A repeat offense will be considered for automatic failure. Cheating includes getting or giving unauthorized help for any class assignments, as well as "wondering eyes" – gazing at someone else's paper during a quiz or exam. Use of unauthorized notes during a test is also cheating. This calls attention to the use of some of the newer, high capacity alphanumeric memory calculators or of cell phones. If you use such a calculator, or any device of similar capability, activation of the alphanumeric memory in any form will be treated as cheating. Plagiarism is using material from any source, even the internet, without giving credit.

D- Grading policy:

- Reports: 20 marks
- Homeworks: 15 Marks
- Quizzes: 15 marks
- Final exam: 50 marks
  Total: 100 marks

E- Available university services that support achievement in the course:
You can use other references available in the library or web sites to improve your personal skills in understanding and solving problems

26 References:

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

- Textbook Title: University Physics with Modern Physics Authors: F. Sears and M. Zemansky Edition: Thirteenth Publisher: Pearson Education Limited

B- Recommended books, materials, and media:

- Physics For Scientists and Engineers with Modern Physics by Raymond A. Serway and John W. Jewett Jr., 9th edition (Thomson Learning, Belmont, CA, USA, 2014).
- David Halliday, Robert Resnick and Jearl Walker, Extended Principles of Physics, 9th edition (Wiley, 2011).
- Bauer Westfall, University Physics with Modern Physics (McGraw Hill, 2011). James S. Walker, Physics, 4th Edition, (Addison–Wesley, 2010).
- Giancoli, Physics for Scientists & Engineers with Modern Physics, 4th edition, (Pearson Education, 2009).
  Ohanian and Market, Physics for Engineers and Scientists, extended 3rd edition (Norton, 2007).

27 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: ----------