Jordan University of Science and Technology

Faculty of Science & Arts

Physics Department

PHY101 General Physics (1)

Summer Semester 2019-2020

Course Catalog
3 Credit Hours. This course is an introductory course in Newtonian mechanics with topics include: kinematics in one and two dimensions, dynamics (Newton's laws of motion), Newton's laws in circular motion, work and energy, collisions, rotational motion and equilibrium of rigid bodies.

Text Book	
Title	Physics for Scientists and Engineers with Modern physics
Author(s)	John W. Jewett and R. Serway
Edition	9th Edition
Short Name	Serway
Other Information	

Course References

Short name	Book name	Author(s)	Edition	Other Information
Giancoli	Physics for Scientists and Engineers with Modern Physics by	Douglas C. Giancoli	8th Edition	
Halliday	Fundamental of physics	Halliday and Resnick	6th Edition	
Tipler	Physics for Scientists and Engineers	Tipler	6th Edition	

Instructor	
Name	**Prof. Mohammad-Khair Qaseer**
Office Location	PH4 L-1

Office Hours	Sun : 11:45 - 13:00 Mon : 11:45 - 13:00 Tue : 11:45 - 14:00 Wed : 11:45 - 14:00
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Instructor	
Name	**Prof. Fedda Alzoubi**
Office Location	PH3 L1
Office Hours	Sun : 09:30 - 11:00 Mon : 09:30 - 11:00 Tue : 09:30 - 11:00 Wed : 09:30 - 11:30
Email	fedda@just.edu.jo

Class Schedule & Room

Section 1:
Lecture Time: Sun, Mon, Tue, Wed : 08:30 - 10:00
Room: منصة الكترونية

Section 2:
Lecture Time: Sun, Mon, Tue, Wed : 10:00 - 11:30
Room: منصة الكترونية

Section 5:
Lecture Time: Sun, Mon, Tue, Wed : 13:00 - 14:30
Room: منصة الكترونية

Tentative List of Topics Covered

Weeks	Topic	References
Weeks 1, 2	Vectors: Coordinate systems, vector and scalar quantities, some properties of vectors, components of a vector and unit vectors, the scalar product of two vectors (7.3), the vector product (11.1)	**Ch. 3** From **Serway**
Weeks 2, 3	Motion in One Dimension: Displacement, velocity and speed, instantaneous velocity and speed, acceleration, one-dimensional motion with constant acceleration, freely falling objects.	**Ch. 3** From **Serway**, **Ch. 2** From **Giancoli**
Week 4	Motion in Two Dimensions: The displacement, velocity and acceleration vectors, two-dimensional motion with constant acceleration, projectile motion, particle in uniform circular motion, Tangential and Radial acceleration	**Ch. 4** From **Serway**
Weeks 5, 6	Newton's laws of Motion: The concept of force, Newton's First law, Newton's Second law, The force of gravity and weight, Newton's Third law, some applications of Newton's law, forces of friction.	**Ch. 5** From **Serway**
Weeks 6, 7	Circular Motion and Other Applications of Newton's Laws: Newton's second law applied to uniform circular motion, nonuniform circular motion.	**Ch. 6** From **Serway**

Weeks 7, 8	Energy of a system: Work done by constant force, work done by varying force, kinetic energy and the work energy theorem, Potential energy of a system, conservative and nonconservative forces, conservative forces and potential energy	**Ch. 7** From **Serway**
Week 9	Conservation of Energy: conservation of mechanical energy, isolated and non isolated systems, work done by nonconservative forces, power	**Ch. 8** From **Serway**
Weeks 10, 11	Linear Momentum and Collisions: Linear momentum and its conservation, impulse and momentum, elastic and inelastic collisions in one dimension, two-dimensional collisions, the center of mass, motion of a system of particles	**Ch. 9** From **Serway**
Weeks 12, 13	Rotational Kinematics and Dynamics: Angular displacement, velocity and acceleration, rotational kinematics, angular and linear quantities, rotational energy, calculation of moments of inertia, torque, relationship between torque and angular acceleration, work, power, and energy in rotational motion, Rolling motion of a rigid object.	**Ch. 10** From **Serway**
Week 14	Rolling Motion and Angular Momentum: Rolling motion of rigid body, angular momentum of a particle, angular momentum of a rotating rigid body, conservation of angular momentum	**Ch. 11** From **Serway**
Week 15	Static Equilibrium and Elasticity: The condition of equilibrium of a rigid object, examples of rigid objects in static equilibrium.	**Ch. 12** From **Serway**
Week 16	Final exams starts	

Mapping of Course Outcomes to Program Student Outcomes	**Course Outcome Weight (Out of 100%)**	**Assessment method**
Show a basic knowledge and understanding of Kinematics relations in one and two dimensions using vector algebra [31]	30%	
Apply Newton's laws of motion to solve linear dynamic problems. [31]	20%	
Use the work-energy approach to solve dynamic problems involving conservative and non-conservative forces [31]	20%	
Apply momentum-impulse approach to solve problems involving changing motions due to elastic and in-elastic collisions [31]	10%	
Apply rotational analogs of Newton's laws of motion to solve dynamic problems involving rotational motion [31]	20%	

Relationship to Program Student Outcomes (Out of 100%)					
1	2	3	4	5	6
100					

Evaluation	
Assessment Tool	**Weight**
First Exam	30%
Second Exam	30%

final exam	40%

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