TISHK INTERNATIONAL UNIVERSITY
FACULTY OF EDUCATION
Department of PHYSICS EDUCATION,
2022-2023 Spring
Course Information for PHYS 216 MECHANICS II

Course Name:	MECHANICS II

Code	Regular Semester	Theoretical	Practical	Credits	ECTS
PHYS 216	4	3	2	4	5

Name of Lecturer(s):	Sivar Aziz
Teaching Assistant:	Sebur Salih
Course Language:	English
Course Type:	Main
Office Hours	Tuesday 9:00-11:00
Contact Email:	sivar.aziz@tiu.edu.iq Tel:07502008387
Teacher's academic profile:	MSc.in Material Science (Shape Memory Alloy)
Course Objectives:	This course is the continuum of the PHYS 215 Mech I, basic concepts and principles of mechanics will be studied. The topics of the course will cover the dynamics of systems of particles: Newton's laws of motion, equations of motion for rectilinear and curvilinear motion; Kinetics of particles: work and energy, impulse and momentum, and impact; Kinetics of a rigid body in plane motion: translation, fixed axis rotation, work and energy, impulse and momentum.
Course Description (Course overview):	This course is an introduction to momentum of system of particles, angular momentum of system of particle, kinetic energy of a system of particle, conservation of energy of a system of particle, collision, rigid body, angular momentum of rigid body, momentum of inertia.

COURSE CONTENT

Week	Hour	Date	Topic
1	3	29/1-2/2/2023	Registration to the courses, introduction: review of motion
2	3	5-9/2/2023	Motion in two dimensions: projectile and circular motion
3	3	12-16/2/2023	Newton`s 1st law of motion and its applications
4	3	19-23/2/2023	Newton`s 2nd law of motion and its applications
5	3	26/2-2/3/2023	Newton`s 3rd law of motion and its applications
6	3	5-9/3/2023	Force and Motion - Friction Force
7	3	12-16/3/2023	Force and Motion - Drag Force
8	3	19-23/3/2023	Force and Motion - Torque
9	3	26-30/3/2023	Work and Energy
10	3	2-6/4/2023	Midterm Exam
11	3	9-13/4/2023	Work and Energy - Work done by a Spring
12	3	16-20/4/2023	Kinetic Energy and its applications
13	3	23-27/4/2023	Potential energy and its applications
14	3	30/4-4/5/2023	Conservation of Energy
15	3	7-11/5/2023	Conservation of momentum
16	3	14-18/5/2023	Rotational motion
17	3	21-25/5/2023	General Review
18	3	28/5-1/6/2023	Final Exam
19	3	4-8/6/2023	Final Exam

COURSE/STUDENT LEARNING OUTCOMES

1	To be able to apply the Newton`s laws of motion
2	To be able to analyze examples of energy and work
3	To understand impulse and momentum
4	To understand torque and be able to solve question in regard.
5	To have basic knowledge about rotational motion

COURSE'S CONTRIBUTION TO PROGRAM OUTCOMES
(Blank : no contribution, I: Introduction, P: Profecient, A: Advanced)

	Program Learning Outcomes	Cont.
1	Discuss concepts and principles of physics.	A
2	Conduct proper experiments safely and interpret the data in physics teaching physics.	A

3	Use the results of recent education and subject-specific developmental research when designing, implementing and justifying their own practice as a teacher.	A
4	Apply analytical and theoretical skills to model and solve physics problems.	A
5	Identify students' misconceptions and deal with them in classroom.	A
6	Prepare physics lessons with appropriate learning materials and teaching methods.	I
7	Effectively assess, plan, teach, organize, and manage physics classrooms.	I
8	Use appropriate methods and techniques to improve students' critical thinking, creative thinking and problem-solving skills in physics.	P
9	Use required modern methods and techniques for student-centered teaching by considering individual and cultural differences of students.	P
10	Effectively use a variety of teaching technologies and techniques and classroom strategies to foster student learning.	P
11	Communicate effectively and work collaboratively within the context of a global society.	
12	Exhibit character and decision-making skills embodying professionalism and ethical behavior.	

Prerequisites (Course Reading List and References):	Introduction to physics I and II, Mechanics I, Introduction to Math I and II, Calculus I
Student's obligation (Special Requirements):	Students should attend classes on time, do homework on time, answer questions banks, do projects. follow the source book so that to be able to solve new idea questions

Weekly Laboratory/Practice Plan:

Week	Hour	Date	Topics
1	2	29/1-2/2/2023	Registration to the courses
2	2	5-9/2/2023	Introduction: review of first semester
3	2	12-16/2/2023	
4	2	19-23/2/2023	Determination of Gravitational Acceleration (g) with Motion Detector
5	2	26/2-2/3/2023	Torque around a fixed point
6	2	5-9/3/2023	Newton's Second Law of Motion
7	2	12-16/3/2023	Parallel and Series Combination of Springs
8	2	19-23/3/2023	Kinetic energy
9	2	26-30/3/2023	Air Resistance
10	2	2-6/4/2023	Midterm Week
11	2	9-13/4/2023	Conservation of energy in mass spring system
12	2	16-20/4/2023	Determination of Tension on a string with a conical pendulum
13	2	23-27/4/2023	Rotational motion
14	2	30/4-4/5/2023	Revision week
15	2	7-11/5/2023	Lab Final exam
16	2	14-18/5/2023	Final Exam
17	2	21-25/5/2023	Final Exam
18	2	28/5-1/6/2023	Final Exam
19	2	4-8/6/2023	Final Exam

Course Book/Textbook:	College Physics: Serway and Jewet Physics for Scientists and Engineers with Modern Physics (2014) - Ninth edition Lab Handouts prepared by the lab instructor Halliday and Resnick - Fundamentals of Physics (Ninth Edition)
Other Course Materials/References:	Principles of Physics - For Scientists and Engineers Hafez A. Radi • John O. Rasmussen
Teaching Methods (Forms of Teaching):	Lectures, Practical sessions, Exercises, Presentation, Project, Assignments, Demonstation, , ,

COURSE EVALUATION CRITERIA

Method	Quantity	Percentage (%)
Quiz	1	5
Homework	1	5
Project	1	5
Midterm Exam	1	20
Laboratory	1	25
Final Exam	1	40
Total		**100**

Examinations: Essay Questions, True-False, Fill in the Blanks, Multiple Choices, Short Answers, Matching, , ,

Extra Notes:

ECTS (ALLOCATED BASED ON STUDENT) WORKLOAD

Activities	Quantity	Workload Hours for 1 quantity*	Total Workload
Theoretical Hours	19	3	57
Practical Hours	19	2	19
Final Exam	1	15	15
Quiz	1	4	4
Homework	1	5	5
Project	1	10	10
Midterm Exam	1	5	5
Laboratory	1		0
Total Workload			**115**
ECTS Credit (Total workload/25)			**5**

Peer review

Signature:	Signature:	Signature:
Name:	Name:	Name:
Lecturer	Head of Department	Dean