Zarqa University
Faculty Science
Department: Physics
Course title: General Physics 101Course ID: 0300121 **First Semester 2019/2020**

Course description:

Measurement and Dimensions, Motion in a straight line, Vectors, Motion in the plane, Newton's Laws, friction, Work, Power, Energy (conservation, conservation and conservative and non-conservative energy) and Rotational Motion.

Learning Outcomes

1. Knowledge of the fundamental concepts for mechanics
2. Understanding of physical measurements and dimensions, motion and Newton`s Lows
3. Understanding of origins of work and energy

Aims of the course:

1. To understand different physicals quantities and their units (time, length and mass)
2. To understand the physics of motion (ID and 2D), and Newton's law
3. To understand the rotational motion and its applications
4. To understand the force, energy, power and their relationships.
5. To understand energy conservations and its applications.

Intended Learning Outcomes: (ILOs)

A. Knowledge and Understanding

A1. Concepts and Theories:

Concepts of measurements of physical quantities, Kinetic Equations, concepts of motion in one and 2 dimensions, Newton's Laws of motion, and theory of energy conservation.

A2. Contemporary Trends, Problems and Research:

Recognize the methodology of solving problems by using Newton's Laws and kinetic equations.

A3. Professional Responsibility:

Measure, track and understand the motion and energy of different physical systems.

B. Subject-specific skills

B1. Problem solving skills:

- Applying kinetic equations, Newton's Laws and energy conservation theory to solve different problems related to the motion in different dimensions and energy conservation for different systems..

B2. Modeling and Design:

- Applying Newton's Laws and energy theories model and design infrastructure facilities, tools, mechanical parts in the machine.

B3. Application of Methods and Tools:

-Integrate the concepts and principles of mechanics (Newton's Laws, energy theories) for applications.

C. Critical-Thinking Skills

C1.Analytic skills:

- Relate the theoretical information to practical work to increase the understandings of the basic knowledge

C2.Strategic Thinking:

- Applying Newton's Laws and energy theories to solve different engineering problems

C3.Creative thinking and innovation:

- Practice kinetic and energy theories in real world applications; such as Infrastructure and Automotive industry.

D. General and Transferable Skills (other skills relevant to employability and personal development)

D1. Communication:

-Apply different physical principles in different disciplines of science and industry.
- Enhance the observation of individual to the natural phenomena.
- Assist the student to participate in life science studies

D2.Teamwork and Leadership:

- Increase the cooperative behavior between the different research groups of different applications.
- To work in stressful environment and within constraints.
- To communicate effectively.
- Use the efficient IT capabilities.
- Management the tasks efficiently.
- To acquire entrepreneurial skills.
- Refer to relevant literature effectively.
- Searching for the information and going to self-learning a new topic

Course structures:

Week	Credit Hours	ILOs	Topics	Teaching Procedure	Assessment methods
1	3	A1,B3	**Physics and Measurements**	Lecture, Oral inquiry	Class participation Solving assigned problems: 9-12, 17, 35, 16 and 49
2-3	3	A2,B3,C1	**Motion in 1D**	Lecturing discussion	Solving assigned problems: 1-7, 15, 19, 24-26
4-5	3	A1,C2,C3	**Motion in 1D , Vectors**	Lecture, Class discussion	Chapter 2: Solving problems; 16-17, 33, 35, 43, 58 and 62. Chapter 3: Short-answer questions
6-7	3	A3,B1,B3,C 2, D1	**Vectors, Motion in 2D**	Lecture-demonstration Problem solving or case studies	Chapter 3: Solving problems; 1-6, 11, 25 and assigned homework;31-37 Chapter 4: Short-answer questions on vectors
8-9	3	A1,C2,B3,D1, D2	**Motions in 2D, Laws of motion**	Lecturing discussion	Chapter 4: Solving problems; 6-7, 9, 21, 25, 29, 33 and 36assigned home work;40, 70, 84, and 86. Chapter 5: Short-answer questionson

					Laws of Motion
10-11	3		**Laws of motion, Circular motion**	Lecturing discussion	Chapter 5: Solving problems; 1-3, 15, 19, 22, 28, 36-37, 42, 45, 46, 49, 64. Assigned home work; 65, 70, 88, 85, 89, 93. Chapter 6: Solving problems;1-10, 51-5258 and 60
12-14	3	A1,C2,B3,D1, D2	**Energy Systems**	Lecturing discussion	Chapter 7: Solving problems; 5-10, 14, 17, 25, 31.Assigned homework; 47, 49, 52, 60 and 66. . Chapter 7: Short-answer questions on Energy

References:

A. Main Textbook:

"Physics for Scientist and Engineers"
Serway Jewett, 9th Edition

B. Supplementary Textbook(s): TD (to be demined)

"Physics for Scientists and Engineers", Serway Jewett, 6th Edition

Assessment Methods:

Methods	Grade	Date
1st	25	TD
2nd	25	TD
Final	50	TD