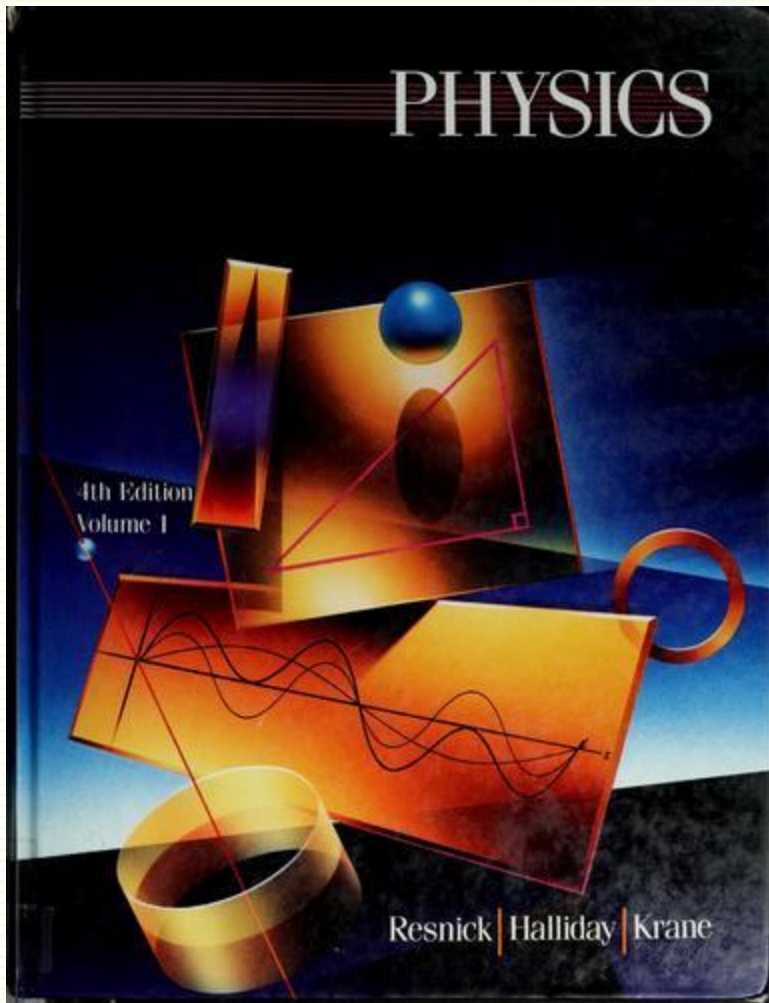


General Physics 4031101



**Physics Department
Faculty of Applied Science
Umm Al-Qura University**

What is Physics?

- Physics is the study of the natural phenomena and expressed these phenomena as a mathematical equations which is called Laws of nature.
- The laws of physics can be used to predict the results of future experiments.
- Physics is based on experimental observations and quantitative measurements.
- Physicist is a scientist who studies physics, through observation of natural phenomena and try to find patterns and principles that relate these phenomena.



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Physics is the science of
measurements

Objectives of the course

- This course is designed to demonstrate and consolidate the basic physics concepts in the branches of physics such as mechanics, properties of matter, heat and optics and also aims to link the mathematical equations to the applied physics.
- The course will cover the principle of physics, such as measurements, mechanics, fluid mechanics, heat, and light.
- This course will provide a conceptual and experimental background in physics sufficient to enable students to take courses that are more advanced in related fields.

Learning outcomes

At the end of this course, the student should acquire:

1. The fundamental units in physics.
2. The dimensions of the physical quantity.
3. The vector and scalar.
4. How to add and subtract, and multiply the vectors.
5. The velocity , acceleration, and momentum, the force acting on a moving boy.
6. The first and second, and third Newton's laws and their applications.
7. The work and energy, and power.

Learning outcomes

8. The density, the pressure, within the fluid as well as the Pascal's principle and Archimedes' principle.
9. The concepts of fluid flow and equation of continuity.
10. Bernoulli's equation, viscosity.
11. Temperatures scales, Heat energy, specific heat, heat capacity, first law of thermodynamic.
12. The transference of heat.
13. Reflection of light through plane and curved surface.
14. The law of reflection.
15. Refraction of light through plane and spherical medium.

Distribution of Grades

	Test	Percentage	Date
1	Quiz's & Homework & Scientific reports	10%	Continued all over the course
2	Mid term Exam.	20%	Saturday : at 9 th week (for male students)
3	Laboratory	20%	
4	Final exam.	50%	At the end of the term
5	Total	100 %	

For Farther Reading

1. Halliday & Resnick & Krane , Physics, 4th edition.
2. Halliday & Resnick & Walker, Fundamental of Physics, 10th edition.
3. James Walker, Physics, 4th edition
4. HUGH D. YOUNG, ROGER A. FREEDMAN, A. LEWIS FORD, University Physics 13th edition.
5. Raymond A. Serway, John W. Jewett, Jr. , PHYSICS for Scientists and Engineers with Modern Physics, 7th edition.

Content

Items	No. of weeks
1 Measurement (One Week) 1.1 The Physical Quantities, Standards, and Units 1.2 The International System of Units 1.3 The Standard of Time 1.4 The Standard of Length 1.5 The Standard of Mass 1.6 Dimensional Analysis	1
2 Motion in One Dimension (One Week) 2.1 Particle Kinematics 2.2 Descriptions of Motion 2.3 Average Velocity 2.4 Instantaneous Velocity 2.5 Accelerated Motion 2.6 Motion With Constant Acceleration 2.7 Freely Falling Bodies	1

Content

Items	No. of Weeks
3 Vectors (Two Weeks) 3.1 Vectors and Scalars 3.2 Adding Vectors: Graphical Method 3.3 Components of Vectors 3.4 Adding Vectors: Component Method 3.5 Multiplication of Vectors	2
4 Force and Newton's Laws (Two Weeks) 5.1 Newton's First Law 5.2 Force 5.3 Mass 5.4 Newton's Second Law 5.5 Newton's Third Law 5.6 Units of Force 5.7 Weight and Mass 5.8 Applications of Newton's Laws 5.9 More Applications of Newton's Laws	2

Content

Items	No. of Weeks
5 Work and Energy (One Week) 7.1 Work Done By a Constant Force 7.2 Work Done By a Variable Force; One Dimensional Case 7.4 Kinetic Energy and Work-energy Theorem 7.5 Power	1
6 Fluids Statics (One Week) 17.1 Fluids and Solids 17.2 Pressure and Density 17.3 Variation of Pressure in a Fluid at Rest 17.4 Pascal's Principle and Archimedes' Principle 17.5 Measurement of Pressure 17.6 Surface Tension	1

Content

Items	No. of Weeks
<p>7 Fluid Dynamics (One Week)</p> <p>18.1 General Concepts of Fluid Flow 18.2 Streamlines and the Equation of Continuity 18.3 Bernoulli's Equation 18.4 Viscosity</p>	<p>1</p>
<p>8 Heat and First Law of Thermodynamics (Two Weeks)</p> <p>25.1 Heat: Energy in Transit 25.2 Heat Capacity and Specific Heat 25.3 Heat Capacities of Solids 25.4 Heat Capacities of Gases and Ideal Gas 25.5 The First Law of Thermodynamics 25.6 Applications of the First Law 25.7 The Transfer of Heat</p>	<p>2</p>

Content

Items	No. of Weeks
9 Reflection and Refraction at Plane Surfaces (Two Weeks) 43.1 Geometrical Optics and Wave Optics 43.2 Reflection and Refraction 43.3 Deriving the Law of Reflection 43.4 Image Formation by Plane Mirrors 43.5 Deriving the Law of Refraction 43.6 Total Internal Reflection	2
10 Spherical Mirrors and Lenses (One Week) 44.1 Spherical Mirrors 44.2 Spherical Refracting Surfaces 44.3 Thin Lenses 44.4 Compound Optical Systems 44.5 Optical Instruments	1
Total No. of Weeks	14

إلى كل طالب وطالبة من ابنائنا الاعزاء

الحمد لله رب العالمين ، والصلاة والسلام على سيدنا ونبينا محمد، صل الله عليه وعلى آله واصحابه والتابعين بإحسان الى يوم الدين.

الى كل طالب الى كل طالبة من ابنائنا الاعزاء يسعدنا نحن اساتذة مقرر فيزياء العامة 101 ان ندرس لكم هذا المقرر، ويسعدنا ان نساهم في بناء جيل واعد مثلكم. اجتهادكم واخلاصكم وتفانيكم في طلب العلم والحصول على المعرفة نقدره ونثمنه. نحن ننشد فيكم الاحترام والاخلاق الرفيعة.

ندعوا الله لكم بكل خير. نسعد بالطلاب المتميزين ونحرص بان يكون طلابنا دوما متميزين ونساعد الطلاب المتعثرين، فنحن نترقب جميعا تخرجكم من الجامعة ونترقب بكل امل في الله تعالى بمستقبل زاهر لكم، ولهذا البلد الكريم.

نسعد باستقبالكم في مكاتبنا، كما نسعد بالنقاش معكم ومشاركتكم أفكاركم،

في قسم الفيزياء نحن أسرة واحدة، ستجدون افرادا محترمين يقدمون لكم كل عون ومساعدة وخدمة ويسهلون عليكم الكثير من العقبات، فقط تواصلوا مع الجميع دون تردد.



وفقنا الله تعالى وأياكم لما يحبه و يرضاه وتحياتنا اليكم جميعا.

اسرة مقرر فيزياء عامة 101