

Tulsa Public Schools

Physics Pacing Calendar

COURSE TITLE: Physics

COMPUTER NUMBER: 6611, 6612, 6613

GRADE LEVEL(S): 11, 12

PREREQUISITE: Completion or concurrent enrollment in Algebra II

CREDIT(S): 1 Unit

This course provides the student with an understanding of the fundamental concepts of the nature of matter and energy and their interrelationship. It includes consideration of the ways in which energy may be changed, controlled, and converted into useful work. A major concern of this course is the study of the physical laws by means of developing skills, habits of thinking, and attitudes through laboratory inquiry and experimentation. Methods of measurement and mathematics will be routinely applied and utilized as the indispensable tool of physics. Students are required to do a research paper and/or science project. Topics covered include motion, acceleration, forces, vectors, momentum, work, energy, simple machines, waves, sound, light, and electricity.

The material found within this Pacing Calendar is taken from *Glencoe Science; Physics – Principles and Problems*; 2005 print edition. Approved and adopted Physics Textbook for Tulsa Public Schools.

Each Unit will address the Content Standard; in accordance with the “Priority Academic Student Skills for Science” set forth, though the Oklahoma State Department of Education. Additionally, each unit and Chapters are provided with a **suggested time** for completion of that Unit and/or Chapter of instruction.

It is further recognized that Mastery of any Unit and/or Chapter may not be totally achieved at the completion of that Unit and/or Chapter within the set forth suggested time; however; Mastery of the total Content Standards should be achieved at the successful completion this Pacing Calendar.

Additional and enrichment material is obtainable at “Glencoe Science Physic Web Site, physicspp.com”

Content Standard Addressed:

1.1 The motion of an object can be described by its position, direction of motion, and speed change in motion occurs when a net force is applied.

Unit 1: INTRODUCTION OF PHYSICS 1 Week

Chapter 1: Physics Toolkit

1.1 Mathematics and Physics

1.2 Measurement

1.3 Graphing Data

Content Standard Addressed:

- 1.1 The motion of an object can be described by its position, direction of motion, and speed change in motion occurs when a net force is applied.
- 1.2 Objects change their motion only when a net force is applied. Newton's laws of motion used to calculate precisely the effects of forces on the motion of objects
- 1.3 Gravitation is a universal force that each mass exerts on any other mass. The strength of the gravitational attractive force between two masses is proportional to the masses and inversely proportional to them square of the distance between them.
- 2.1 Energy can be transferred but never destroyed. As these transfers occur, the matter involved becomes steadily less ordered
- 2.2 All energy can be considered to be kinetic energy, potential energy, or energy contained by a field

Unit 2	MECHANICS	16.5 Weeks
	Chapter 2: Representing Motion	(1.5 weeks)
	2.1 Motion	
	2.2 Displacement	
	2.3 Position-Time Graphing	
	2.4 Velocity	
	Chapter 3: Accelerated Motion	1.5 weeks)
	3.1 Acceleration	
	3.2 Constant Acceleration	
	3.3 Graphing Free Fall Acceleration	
	Chapter 4: Forces in One Dimension	(1.5 weeks)
	4.1 Force and Motion	
	4.2 Newton's Laws	
	4.3 Interaction Forces	
	Chapter 5: Forces in Two Dimensions	(2.5 week)
	5.1 Vectors	
	5.2 Friction	
	5.3 Force and Motion in two Dimensions	
	Chapter 6: Motion in Two Dimensions	(2.5 week)
	6.1 Projectile Motion	
	6.2 Circular Motion	
	6.3 Relative velocity	
	Chapter 7: Gravitation	(1.5 week)
	7.1 Planetary Motion	

7.2 Universal Law of Gravitation	
Chapter 8: Rotational Motion	(2 week)
8.1 Rotational Motion	
8.2 Rotational Dynamics	
8.3 Equilibrium	
Chapter 9: Momentum and Conservation	(1 week)
9.1 Impulse and Momentum	
9.2 Conservation of Momentum	
Chapter 10: Energy, Work, and Simple Machines	(1 week)
10.1 Energy and work	
10.2 Machines	
Chapter 11: Energy and Its Conservation	(1.5 weeks)
11.1 Many forms of Energy	
11.2 Conservation of Energy	

Content Standard Addressed:

2.3 Heat consists of random motion and the vibrations of atoms, molecules and ions. The higher the temperature, the greater the atomic or molecular motion

Unit 3	States of Matter	4 weeks
	Chapter 12: Thermal Energy	(2 weeks)
	12.1 Temperature and thermal energy	
	12.2 Laws of Thermodynamics	
	Chapter 13: States of Matter	(2 weeks)
	13.1 Fluids	
	13.2 Forces within liquids	
	13.3 Fluids at rest and in motion	
	13.4 Solids	

Content Standard Addressed:

3.1 Waves have energy and can transfer energy when they interact with matter. Sound waves and electromagnetic waves are fundamentally different

Unit 4	Waves and Light	3 weeks
	Chapter 14: Vibrations and Waves	(1.5 weeks)
	14.1 Periodic Motion	
	14.2 Wave Properties	
	14.3 Wave Behavior	
	Chapter 15: Sound	(1.5 weeks)
	15.1 Properties and Detection of Sound	
	15.2 The Physics of Music	

Content Standard Addressed:

1.3 The electric force is a universal force that exists between any two charged objects. The strength of the force is proportional to the charges, and, as with gravitation, inversely proportional to the square of the distance between them.

1.4 Electricity and magnetism are two aspects of a single electromagnetic force.

3.2 Electromagnetic waves result when a charged object is accelerated or decelerated.

Unit 5	Electricity and Magnetism	11 weeks
	Chapter 20: Static Electricity	(1 week)
	20.1 Electrical Charge	
	20.2 Electrical Force	
	Chapter 21: Electric Fields	(1.5 weeks)
	21.1 Electric Fields Measurement	
	21.2 Electric Fields Applications	
	Chapter 22: Current Electricity	(1.5 weeks)
	22.1 Current and Circuits	
	22.2 Using Electric Energy	
	Chapter 23: Series and Parallel Circuits	(1.5 weeks)
	23.1 Simple Circuits	
	23.2 Applications of Circuits	
	Chapter 24: Magnetic Fields	(1.5 weeks)
	24.1 Magnets: Permanent and Temporary	
	24.2 Force caused by Magnetic Fields	
	Chapter 25: Electromagnetic Induction	(2 weeks)
	25.1 Energy Current from Changing Magnetic Fields	
	25.2 Changing Magnetic Fields Induce EMF	
	Chapter 26: Electromagnetism	(2 weeks)
	26.1 Interactions of Electric and Magnetic Fields and Matter	
	26.2 Electric and Magnetic Fields in Space	