Physics Pacing Guide

Course: **Grade:**

Months/Days	UNITS	STANDARDS	CONTENT Topics being covered? What do students need to know? (*nouns*)	ACTIVITIES w/Integration of Technology & Career Ready Practices	ASSESSMENTS What evidence (formative/summative) is utilized to establish that the content, standards, & skills have been mastered?
Sept-Oct **20 days**	**Unit 1 Basic Skills**	**9-12ETS1-2.6** **9-12ETS1-3.6.1** **9-12ETS1-4.4.1** **9-12ETS1-4.ETS1.B.1** **9-12.HS.PS1-1.2** **9-12.HS.PS1-1.2.1** **9-12.HS.PS1-2.6** **9-12.HS.PS1-3.1.1** **9-12.HS.PS1-4.2.1** **9-12.HS.PS2-1.2.1** **9-12.HS.PS2-2.4.1** **9-12.HS.PS2-3.2.1** **9-12.HS.PS2-3.6.1** **9-12.HS.PS2-3.ETS1.A.1** **9-12.HS.PS2-3.ETS1.C.1** **9-12.HS.PS2-5.3.1** **9-12.HS.PS3-1.4.1** **9-12.HS.PS3-2.2.1**	**Motion terminology** **Math and algebra review** **Metric system and engineering notation** **Basic graphing** **Graphing motion** **Equations of motion**	**** For a complete list of specific activities for each unit, see the unit plans**** **Guided discussion of key topics and derivation of major equations** **Guided practice problems/student lead solutions and problem solving** **Investigational labs/data collection and analysis/ lab report write-up/photo journal**	**Quiz on motion terminology and math review** **Quiz on metric system and basis of graphing** **Quiz on equations of motion and graphing motion** **Unit 1 Exam** **MPA**

				develpment **Independent problem solving with self grading practice problems** **Engineering Challenges/small group work/ develop unique solutions to technical problems/develop photo journal of design and implementation process.**	
Oct-Nov 8 **30 Days**	**Unit 2 Forces**	**9-12ETS1-2.6** **9-12ETS1-3.6.1** **9-12ETS1-4.4.1** **9-12ETS1-4.ETS1.B.1** **9-12.HS.PS1-1.2** **9-12.HS.PS1-1.2.1** **9-12.HS.PS1-2.6** **9-12.HS.PS1-3.1.1** **9-12.HS.PS1-4.2.1** **9-12.HS.PS2-1.2.1** **9-12.HS.PS2-1.PS2.A.1** **9-12.HS.PS2-2.4.1**	**Introduction to forces** **Newton's laws of motion** **Force gravity** **Pressure** **Vertical Motion** **Force Friction**	**Guided discussion of key topics and derivation of major equations** **Guided practice problems/student lead solutions and problem solving** **Investigational labs/data collection and**	**Engineering Challenge** **Quiz on forces, pressure and Newton's laws** **Quiz on Gravity and vertical motion** **Quiz on forces friction, elastic and buoyancy**

		9-12.HS.PS2-3.2.1 **9-12.HS.PS2-3.6.1**	**Stopping distance** **Force Buoyancy** **Force Elastic**	**analysis/ lab report** **write-up/photo journal develpment** **Independent problem solving with self grading practice problems** **Engineering Challenges/small group work/ develop unique solutions to technical problems/develop photo journal of design and implementation process.**	**Unit 2 Exam** **Newton's laws and forces** **MPA**
Nov 11- Dec 20 **25 days**	**Unit 3** **Multidimensional Motion**	**9-12ETS1-2.6** **9-12ETS1-3.6.1** **9-12ETS1-4.4.1** **9-12ETS1-4.ETS1.B.1** **9-12.HS.PS1-1.2** **9-12.HS.PS1-1.2.1** **9-12.HS.PS1-2.6** **9-12.HS.PS1-3.1.1** **9-12.HS.PS1-4.2.1**	**2 DIMENSIONAL MOTION** **THREE TYPES OF PROJECTILE MOTION** **HORIZONTAL CIRCULAR MOTION**	**Guided discussion of key topics and derivation of major equations** **Guided practice problems/student lead solutions and problem solving**	**Quiz on trig review and 2 dim motion** **Quiz on horizontal circ motion** **Quiz on vertical circ motion**

		9-12.HS.PS2-1.2.1 **9-12.HS.PS2-1.PS 2.A.1** **9-12.HS.PS2-2.4.1** **9-12.HS.PS2-3.2.1** **9-12.HS.PS2-3.6.1** **9-12.HS.PS2-3.ET S1.A.1** **9-12.HS.PS2-3.ET S1.C.1** **9-12.HS.PS2-4** **9-12.HS.PS2-5.3** **9-12.HS.PS2-5.3.1** **9-12.HS.PS2-6.8.1** **9-12.HS.PS3-1.4.1** **9-12.HS.PS3-2.2.1**	**VERTICAL CIRCULAR MOTION** **ORBITAL MOTION**	**Investigational labs/data collection and analysis/ lab report write-up/photo journal develpment** **Independent problem solving with self grading practice problems** **Engineering Challenges/small group work/ develop unique solutions to technical problems/develop photo journal of design and implementation process.**	**Unit 3 exam horiz and vert circular motion and orbits** **MPA**
Jan 6 - Feb 7 **25 days**	**Unit 4 Energy, Momentum and Torque**	**9-12.HS.PS1-3.1.1** **9-12.HS.PS1-4.2.1** **9-12.HS.PS1-7.5.1** **9-12.HS.PS2-2** **9-12.HS.PS2-2.PS 2.A.1**	**Work, energy, and power** **Types of Energy** **Conservation of**	**Guided discussion of key topics and derivation of major equations**	**Quiz on energy, work and power** **Quiz on energy conservation**

		9-12.HS.PS2-2.PS 2.A.2 9-12.HS.PS2-3.2.1 9-12.HS.PS2-3.6.1 9-12.HS.PS2-3.PS 2.A.1 9-12.HS.PS2-5.3.1 9-12.HS.PS2-6.8.1 9-12.HS.PS3-1 9-12.HS.PS3-1.4.1 9-12.HS.PS3-1.PS 3.A.1 9-12.HS.PS3-1.PS 3.B.1 9-12.HS.PS3-1.PS 3.B.2 9-12.HS.PS3-1.PS 3.B.3	**energy Momentum and Impulse Conservation of momentum Torque Rotational equilibrium**	**Guided practice problems/student lead solutions and problem solving Investigational labs/data collection and analysis/ lab report write-up/photo journal develpment Independent problem solving with self grading practice problems Engineering Challenges/small group work/ develop unique solutions to technical problems/develop photo journal of design and implementation process.**	**Quiz on momentum, impulse, and conservation Quiz on torque and rotational equilibrium Unit exam 4.1 Energy, work, power and conservation Unit exam 4.2 Momentum and torque Engineering challenge: roller coaster design/build MPA**
Feb 10 - Feb 28 15 days	**Unit 5 Thermal Physics**	**9-12ETS1-3.6.1 9-12ETS1-4.4.1**	**Temp, scales and expansion**	**Guided discussion of key**	**Quiz on temp scales and**

		9-12ETS1-4.ETS1.B.1 **9-12.HS.PS1-1.2.1** **9-12.HS.PS1-4.2.1** **9-12.HS.PS2-2.4.1** **9-12.HS.PS2-3.2.1** **9-12.HS.PS2-3.6.1** **9-12.HS.PS2-3.ETS1.C.1** **9-12.HS.PS2-5.3.1** **9-12.HS.PS2-6.8.1** **3-1.4.1** **9-12.HS.PS3-2.2.1** **9-12.HS.PS3-2.PS3.A.2** **9-12.HS.PS3-3.PS3.D.1** **9-12.HS.PS3-4** **9-12.HS.PS4-4.PS4.B.1**	**Expansion of gases, ideal gas law and variations** **Heat and phase changes** **Energy conservation with heat** **Convection, conductiona and radiation.**	**topics and derivation of major equations** **Guided practice problems/student lead solutions and problem solving** **Investigational labs/data collection and analysis/ lab report write-up/photo journal develpment** **Independent problem solving with self grading practice problems** **Engineering Challenges/small group work/ develop unique solutions to technical problems/develop photo journal of design and implementation**	**thermal energy** **Quiz on conservation of energy heat and thermal equilibrium** **Unit 5 exam**

				process.	

Mar 2 -Mar 27 20 days	Unit 6 Electricity and Cicrcuits	9-12ETS1-2.6 9-12ETS1-3.6.1 9-12ETS1-4.4.1 9-12ETS1-4.ETS1.B.1 9-12.HS.PS1-1.2 9-12.HS.PS1-1.2.1 9-12.HS.PS1-1.PS1.A.1 9-12.HS.PS1-2.6 9-12.HS.PS1-3.1.1 9-12.HS.PS1-4.2.1 9-12.HS.PS2-1.2.1 9-12.HS.PS2-2.4.1 9-12.HS.PS2-3.2.1 9-12.HS.PS2-3.6.1 9-12.HS.PS2-3.ETS1.A.1 9-12.HS.PS2-3.ETS1.C.1 9-12.HS.PS2-4 9-12.HS.PS2-4.PS2.B.1 9-12.HS.PS2-4.PS2.B.2 9-12.HS.PS2-5.3 9-12.HS.PS2-5.3.1 9-12.HS.PS2-5.PS3.A.1 9-12.HS.PS2-6.8.1	Electrostatics Electric fields Capacitors Voltage and current Power and cost of electricity Resistance and resistors Ohm’s law Series and parallel circuits	Guided discussion of key topics and derivation of major equations Guided practice problems/student lead solutions and problem solving Investigational labs/data collection and analysis/ lab report write-up/photo journal develpment Independent problem solving with self grading practice problems Engineering Challenges/small group work/ develop unique solutions to	Quiz on electrostatics Quiz on capacitors and power Quiz on resistance and Ohm’s law Quiz on series and parallel circuits Unit 6 exam, everything electrical MPA

		9-12.HS.PS3-1.4.1 **9-12.HS.PS3-2.2.1**		**technical problems/develop photo journal of design and implementation process.**	
April - Apr 17 **15 days**	**Unit 7 Magnetism**	**9-12ETS1-2.6** **9-12ETS1-3.6.1** **9-12ETS1-4.4.1** **9-12ETS1-4.ETS1.B.1** **9-12.HS.PS1-1.2** **9-12.HS.PS1-1.2.1** **9-12.HS.PS1-2.6** **9-12.HS.PS1-3.1.1** **9-12.HS.PS1-4.2.1** **9-12.HS.PS2-1.2.1** **9-12.HS.PS2-2.4.1** **9-12.HS.PS2-3.2.1** **9-12.HS.PS2-3.6.1** **9-12.HS.PS2-3.ETS1.A.1** **9-12.HS.PS2-3.ETS1.C.1** **9-12.HS.PS2-4.PS2.B.2** **9-12.HS.PS2-5** **9-12.HS.PS2-5.3** **9-12.HS.PS2-5.3.1** **9-12.HS.PS2-5.PS2.B.1** **9-12.HS.PS2-6.8.1**	**Intro to magnetism** **Magnetic fields** **Electromagnets** **Magnetic force** **Magnetic induction** **Electrical transformers**	**Guided discussion of key topics and derivation of major equations** **Guided practice problems/student lead solutions and problem solving** **Investigational labs/data collection and analysis/ lab report write-up/photo journal develpment** **Independent problem solving with self grading practice problems** **Engineering**	**Quiz on magnetism basics** **Quiz on electromagnetism, induction and transformers** **Unit 7 exam, magnetism** **MPA**

		9-12.HS.PS3-1.4.1 **9-12.HS.PS3-2.2.1** **9-12.HS-PS3-5**		**Challenges/small group work/ develop unique solutions to technical problems/develop photo journal of design and implementation process.**	
Apr 20- June 30 days	**Unit 8 Periodic Motion and Waves**	**9-12ETS1-2.6** **9-12ETS1-3.6.1** **9-12ETS1-4.4.1** **9-12ETS1-4.ETS1.B.1** **9-12ETS1-4.4.1** **9-12.HS-PS1-1.2** **9-12.HS-PS1-1.2.1** **9-12.HS-PS1-2.6** **9-12.HS-PS1-3.1.1** **9-12.HS-PS1-4.2.1** **9-12.HS-PS2-1.2.1** **9-12.HS-PS2-2.4.1** **9-12.HS-PS2-3.2.1** **9-12.HS-PS2-3.6.1** **9-12.HS-PS2-3.ETS1.A.1** **9-12.HS-PS2-3.ETS1.C.1** **9-12.HS-PS2-5.3** **9-12.HS-PS2-5.3.1** **9-12.HS-PS2-6.8.1**	**Pendula** **Springs** **Wave Equations and properties** **Frequency and wavelength of waves** **Intensity of waves** **Doppler Effect** **Sonic booms** **Combining waves** **Music** **Speed of waves**	**Guided discussion of key topics and derivation of major equations** **Guided practice problems/student lead solutions and problem solving** **Investigational labs/data collection and analysis/ lab report write-up/photo journal develpment** **Independent problem solving**	**Quiz on pendulums and springs** **Quiz on wave properties and equations** **Quiz on frequency, wavelength, and wave speed** **Quiz on intensity and combining waves** **Quiz on moving sources of waves** **Unit 8 exam on everything**

		9-12.HS-PS3-1.4.1 9-12.HS-PS3-2.2.1 9-12.HS-PS3-2.PS 3.A.2 9-12.HS-PS3-3.PS 3.A.1 9-12.HS-PS3-3.PS 3.A.2 9-12.HS-PS4-3.PS 4.A.1 9-12.HS-PS4-3.PS 4.B.1 9-12.HS-PS4-3.PS 4.A.1 9-12.HS-PS4-4.PS 4.B.1		**with self grading practice problems Engineering Challenges/small group work/ develop unique solutions to technical problems/develop photo journal of design and implementation process.**	**MPA**