

**MARLBORO CENTRAL SCHOOL DISTRICT-CURRICULUM MAP**

**Subject: Physics**

**Grade 11-12**

<b>Title or Topics (Unit organizing idea)</b>	<b>Concepts (understandings)</b>	<b>Skills (What students actually do)</b>	<b>Major Assessments (Tests, projects, etc.)</b>	<b>Time Frame (Number of weeks)</b>
<b>September</b>  <b>Kinematics</b> (5.1a,d,e)	S.I units Frame of reference Linear motion Freefall Graphing motion	Learn experiment/lab design Graph position, velocity and acceleration versus time Black box concept lab Mathematical analysis	Homework Papers Labs Tests & quizzes	<b>4</b>
<b>October</b>  <b>2-D motion</b> (5.1b,c,f,g,h,n,p,r)	Vectors Periodic motion Momentum Centripetal motion Projectile motion	Determine vectors by graph algebraically & components Employ Unit analysis and formula manipulation predict and graph 2-d motion	Homework Papers Labs Tests & quizzes	<b>3</b>  <b>2</b>
<b>November</b>  <b>Forces</b> (5.1i,j,k,l,m,o,q,t,u)	Newton's laws Friction Gravitation	Determine coefficients of friction Verify centripetal force Determine force resolution Analyze static and dynamic equilibrium	Homework Papers Labs Tests & quizzes	<b>4</b>
<b>December</b>  <b>Energy/work/power</b> (4.1a,b,c,d,e,f,g,h,i)	Potential energy Kinetic energy Potential of spring Work in Physics Energy conservation Pendulums Power in Physics	Use the Work/energy relation Determine Hooke's law Employ the Energy/mass relation Determine spring constants Factors in pendulum period	Homework Papers Labs Tests & quizzes	<b>5</b>
<b>January</b>  <b>Waves</b> (4.3a,b,c,d,e,h,i)	Types of waves Reflection /refraction Diffraction Standing waves	Learn Wave components and wave characteristics Draw wave phenomena Understand Superposition Identify nodes and antinodes in standing waves	Homework Papers Labs Tests & quizzes	<b>4</b>

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<b>February</b>  <b>Sound Light</b>  (4.3g,h,j,k,l,m,n)	Effect of medium on waves Light ray diagrams for: Concave/convex mirrors Convex and concave lenses	Determine the speed of sound Determine the speed of light in glass Determine the index of refraction Draw the path of light rays as they reflect or refract in mirrors and lenses	Homework Papers Labs Tests & quizzes	<b>4</b>
<b>March</b>  <b>Electricity</b>  (4.1j,k,m,n,o,p)	Static electricity Circuits(series/parallel) Ohm's law Kirchhoff's laws Current theory Resistance and resistors	Construct parallel and series circuits Determine resistance in circuits Understand factors affecting resistance Graph voltage versus current Draw circuits with resistors and test meters Map electric fields	Homework Papers Labs Tests & quizzes	<b>5</b>
<b>April</b>  <b>Magnetism</b>  (4.1,k)(51.s)	Right hand rules (3) Ampere's law Lenz's law Faradays law	Explore the concepts of magnetism Learn the relationships involving current and magnetic fields Map magnetic fields	Homework Papers Labs Tests & quizzes	<b>4</b>
<b>May</b>  <b>Modern physics</b>  (5.3a,b,c,d,e,f,g,h,i,j)	Standard model Dual nature of light Photoelectric effect Quantum physics Einstein's Special Relativity	Develop an understanding of the problems in Physics at the end of the 1800's Examine the experiments that led to today's concepts Become aware of what is not known	Homework Papers Labs Tests & quizzes	<b>4</b>
<b>June</b>  <b>Final material Review Regent's test</b>	Wrap up syllabus material Review course.	Physics overview Learn test taking skills	Worksheets practice	<b>3</b>