MARLBORO CENTRAL SCHOOL DISTRICT-CURRICULUM MAP

Subject: Physics **Grade 11-12**

Title or Topics (Unit organizing idea)	Concepts (understandings)	Skills (What students actually do)	Major Assessments (Tests, projects, etc.)	Time Frame (Number of weeks)
September **Kinematics**	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	**4**
October **Forces**	Newton's laws Friction Gravitation Hooke's Law	Determine coefficients of friction Verify centripetal force Determine force resolution Analyze static and dynamic	Homework Papers Labs Tests & quizzes	**4**
November **2-D motion**	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	**3** **2**
December **Energy/work/power**	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	**5**
January **Momentum**	Conservation of momentum Inelastic and elastic collisions Impulse Center mass	Use conservation of momentum for both types of collisions. Integrate Force in respect to time to get Impulse, which is the change in momentum	Homework Papers Labs Tests & quizzes	**5**

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February **Rotational Motion**	Rotational Kinematics Moment of Inertia Torque	Convert translational motion into rotational. Solve for the moment of inertia for given objects. Calculate and determine the net torque done on a system	Homework Papers Labs Tests & quizzes	**4**
March **Angular Momentum**	Angular momentum is conserved for all systems and cases. Kepler's 3 Laws of planetary motion	Solve systems involving angular momentum	Homework Papers Labs Tests & quizzes	**4**
April **Universal Gravitation**	Newton's Law of Gravitation Gravitational Potential Escape speed	Calculate the force between any set of objects Calculate the energy associated with a particle anywhere on earth Determine escape speed for any object leaving earth	Homework Papers Labs Tests & quizzes	**4**
May **Test**	Review	Review	Review	
June **Final Project?**				