

Merrimack School District
Essential Learning Competencies

School	High School
Discipline	Physics
Course Title	Honors and Trig Based Physics

Quarter 1

Essential Learning Competencies	Links to the Rubrics/Standards/Competency	Formative Assessments	Summative Assessments
1. Students should be able to predict and describe one-dimensional motion with constant velocity		Worksheets Virtual labs	Tests Problem sets
2. Students should be able to predict and describe one-dimensional motion with constant acceleration		Worksheets Virtual labs	Tests Problem sets
3. Students should be able to predict and describe two-dimensional motion		Worksheets Virtual labs	Tests Problem sets
4. Students should be able to analyze graphs to describe and predict motion		Worksheets Virtual labs	Tests Problem sets
5. Students should be able to design a controlled experiment and follow a scientific process		Worksheets Virtual labs	Formal lab reports
6. Students should be able to design and construct and apparatus to demonstrate projectile motion		Worksheets Virtual labs	Catapult project

Quarter 2

Essential Learning Competencies	Links to the Rubrics/Standards/Competency	Formative Assessments	Summative Assessments
1. Students should be able to identify and		Worksheets Virtual labs	Tests Problem sets

predict the external forces acting on a free body			
2. Students should be able to create and use a mathematical model to determine the effects of external forces on a free body		Worksheets Virtual labs	Tests Problem sets
3. Students should be able to identify and predict energy types present in a closed system		Worksheets Virtual labs	Tests Problem sets
4. Students should be able to create and use a mathematical model to determine the transfer of energy in a closed system		Worksheets Virtual labs	Tests Problem sets Lab reports
5. Students should be able to create and use a mathematical model to determine the transfer of energy in an open system		Worksheets Virtual labs	Tests Problem sets Lab reports
6. Students should be able to predict and model the mechanical power output in a closed system		Worksheets Virtual labs	Tests Problem sets

Quarter 3

Essential Learning Competencies	Links to the Rubrics/Standards/Competency	Formative Assessments	Summative Assessments
1. Students should be able to predict and		Worksheets Virtual labs	Tests Problem sets

model rotational motion of an object			
2. Students should be able to predict and model circular motion of an object		Worksheets Virtual labs	Tests Problem sets
3. Students should be able to predict and model the effects of external forces acting on a free body traveling in a circular path		Worksheets Virtual labs	Tests Problem sets Lab report
4. Students should be able to predict and model the simple harmonic motion of a pendulum and a mass-spring system		Worksheets Virtual labs	Tests Problem sets
5. Students should be able to identify and predict the motion of mechanical waves		Worksheets Virtual labs	Tests Problem sets
6. Students should be able to identify and predict the motion of sound and light waves		Worksheets Virtual labs	Tests Problem sets Instrument project

Quarter 4

Essential Learning Competencies	Links to the Rubrics/Standards/Competency	Formative Assessments	Summative Assessments
1. Students should be able to identify and describe the transfer of static electrical charge between		Worksheets Virtual labs	Tests Problem sets

conductive objects			
2. Students should be able to create and use a mathematical model to determine the effects of electrostatic forces on a free charged body		Worksheets Virtual labs	Tests Problem sets
3. Students should be able to describe and map the changes in electric potential around charged objects		Worksheets Virtual labs	Tests Problem sets Lab reports
4. Students should be able to identify and predict the flow of electrical current through a circuit		Worksheets Virtual labs	Tests Problem sets
5. Students should be able to create and use a mathematical model to describe the flow of electrical current through a circuit		Worksheets Virtual labs	Tests Problem sets Circuit project
6. Students should be able to predict and model the manner in which charge is stored and discharged from a capacitor in an electrical circuit		Worksheets Virtual labs	Tests Problem sets