

PHYSICS CURRICULUM

| CONTENT | SKILLS | STANDARD(s) | ANCHOR(S) |
|-------------------------------|--|-------------|-----------------|
| 1. One Dimensional Kinematics | 1.01 Apply position, distance, and displacement to a coordinate system. | 3.1.12 | S11.C.3 |
| | 1.02 Determine average speed, distance, or time given two of the other variables. | 3.4.12 | S11.C.3 |
| | 1.03 Determine information, quantitatively and qualitatively, about speed, distance, and time given a graph. | 3.4.12 | S11.C.3 |
| | 1.04 Determine acceleration, velocity, time, distance given any of the other variables. | 3.4.12 | S11.C.3 |
| | 1.05 Determine information, quantitatively and qualitatively, about speed, acceleration, and time given a graph. | 3.4.12 | S11.C.3 |
| | 1.06 Compare and contrast speed and velocity. | 3.1.12 | S11.C.3 |
| | 1.07 Recognize proper units for the variables of this unit. | 3.1.12 | S11.C.3 |
| | 1.08 Apply principles of this unit to everyday life. | 3.8.12 | S11.C.3 |
| | 1.09 Perform a lab that studies the relationships involved in this unit. | 3.7.12 | S11.C.3 S11.A.2 |
| | 1.09 Write a lab report analyzing the aforementioned lab. | 3.2.12 | S11.C.3 S11.A.2 |
| 2. Vectors | 2.01 Differentiate between scalar and vector. | 3.1.12 | S11.C.3 |
| | 2.02 Determine vector components. | 3.4.12 | S11.C.3 |
| | 2.03 Determine resultant vectors graphically. | 3.4.12 | S11.C.3 |
| | 2.04 Determine resultant vectors mathematically. | 3.4.12 | S11.C.3 |
| | 2.05 Use vectors to describe relative motion. | 3.4.12 | S11.C.3 |
| | 2.06 Apply vectors to velocity and acceleration. | 3.4.12 | S11.C.3 |
| | 2.07 Apply principles of this unit to everyday life. | 3.8.12 | S11.C.3 |
| | 2.08 Perform a lab that studies the relationships involved in this unit. | 3.7.12 | S11.C.3 S11.A.2 |
| | 2.09 Write a lab report analyzing the aforementioned lab. | 3.2.12 | S11.C.3 S11.A.2 |

| CONTENT | SKILLS | STANDARD(s) | ANCHOR(S) |
|---|---|-----------------|-----------------|
| 3. Two Dimensional Kinematics | 3.01 Apply position, distance, and displacement to a coordinate system. | 3.4.12 | S11.C.3 |
| | 3.02 Describe qualitatively projectile motion. | 3.4.12 | S11.C.3 |
| | 3.03 Determine acceleration, velocity, time, distance given any of the other variables | 3.4.12 | S11.C.3 |
| | 3.04 Apply principles of this unit to everyday life. | 3.8.12 | S11.C.3 |
| | 3.05 Perform a lab that studies the relationships involved in this unit. | 3.7.12 | S11.C.3 S11.A.2 |
| | 3.06 Write a lab report analyzing the aforementioned lab. | 3.2.12 | S11.C.3 S11.A.2 |
| 4. Newton's Laws | 4.01 Compare and contrast kinematics and dynamics. | 3.1.12 | S11.C.3 |
| | 4.02 Define force, qualitatively and quantitatively, and give its unit. | 3.4.12 | S11.C.3 |
| | 4.03 Define Newton's laws qualitatively. | 3.1.12 | S11.C.3 S11.A.1 |
| | 4.04 Apply Newton's 2nd and 3rd laws quantitatively. | 3.4.12 | S11.C.3 S11.A.1 |
| | 4.05 Sketch free body diagrams. | 3.1.12 | S11.C.3 |
| | 4.06 Determine resultant force vectors. | 3.4.12 | S11.C.3 |
| | 4.07 Apply Newton's Law of Universal Gravitation. | 3.4.12 | S11.C.3 S11.A.1 |
| | 4.08 Apply principles of this unit to everyday life. | 3.8.12 | S11.C.3 |
| | 4.09 Perform a lab that studies the relationships involved in this unit. | 3.7.12 | S11.C.3 S11.A.2 |
| | 4.10 Write a lab report analyzing the aforementioned lab. | 3.2.12 | S11.C.3 S11.A.2 |
| 5. Application of Newton's Laws | 5.01 Analyze frictional force's relationship to normal force and material type. | 3.1.12 | S11.C.3 |
| | 5.02 Determine force of friction, normal force, coefficient of friction, acceleration, velocity, time, or mass given other variables. | 3.4.12 | S11.C.3 |
| | 5.03 Compare and contrast static and kinetic friction. | 3.1.12 | S11.C.3 |
| | 5.04 Determine tension. | 3.4.12 | S11.C.3 |
| | 5.05 Apply Hooke's Law. | 3.4.12 | S11.C.3 S11.A.1 |
| | 5.06 Determine centripetal force or one of its subsidiary values. | 3.4.12 | S11.C.3 |
| | 5.06 Apply forces and subsidiary values for objects in contact with each other. | 3.4.12 | S11.C.3 |
| | 5.07 Apply principles of this unit to everyday life. | 3.8.12 | S11.C.3 |
| | 5.08 Perform a lab that studies the relationships involved in this unit. | 3.7.12 | S11.C.3 S11.A.2 |
| 5.09 Write a lab report analyzing the aforementioned lab. | 3.2.12 | S11.C.3 S11.A.2 | |

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|---|--|-----------------|-----------------|
| 6. Energy and Work | 6.01 Compare and contrast potential and kinetic energy. | 3.1.12 | S11.C.3 S11.C.2 |
| | 6.02 Analyze qualitatively the conversion of the aforementioned energies relative to their relationship to the conservation of energy. | 3.4.12 | S11.C.3 S11.C.2 |
| | 6.03 Calculate potential energy or one of its subsidiary components given variables. | 3.4.12 | S11.C.3 S11.C.2 |
| | 6.04 Calculate kinetic energy or one of its subsidiary components given variables. | 3.4.12 | S11.C.3 S11.C.2 |
| | 6.05 Calculate work given conservative and nonconservative forces. | 3.4.12 | S11.C.3 S11.C.2 |
| | 6.06 Compare and contrast work and energy. | 3.1.12 | S11.C.3 S11.C.2 |
| | 6.07 Analyze, qualitatively and quantitatively, the conversion of work and energy. | 3.4.12 | S11.C.3 S11.C.2 |
| | 6.08 Calculate power or its subsidiary components given other variables. | 3.4.12 | S11.C.3 |
| | 6.09 Recognize proper units for the variables of this unit. | 3.4.12 | S11.C.3 |
| | 6.09 Apply principles of this unit to everyday life. | 3.8.12 | S11.C.3 |
| | 6.10 Perform a lab that studies the relationships involved in this unit. | 3.7.12 | S11.C.3 S11.A.2 |
| 6.11 Write a lab report analyzing the aforementioned lab. | 3.2.12 | S11.C.3 S11.A.2 | |
| 7. Collision and Momentum | 7.01 Define momentum, qualitatively and quantitatively, and give its units. | 3.1.12 | S11.C.3 |
| | 7.02 Calculate momentum or one of its subsidiary components given variables. | 3.4.12 | S11.C.3 |
| | 7.03 Apply Newton's 2nd law to momentum. | 3.4.12 | S11.C.3 S11.A.1 |
| | 7.04 Apply the momentum-impulse theory qualitatively and quantitatively. | 3.4.12 | S11.C.3 |
| | 7.05 Apply the law of conservation of momentum. | 3.4.12 | S11.C.3 |
| | 7.06 Compare and contrast collision types. | 3.1.12 | S11.C.3 |
| | 7.07 Calculate mass, velocity, and associated variables for collisions. | 3.4.12 | S11.C.3 |
| | 7.08 Apply principles of this unit to everyday life. | 3.8.12 | S11.C.3 |
| | 7.09 Perform a lab that studies the relationships involved in this unit. | 3.7.12 | S11.C.3 S11.A.2 |
| | 7.10 Write a lab report analyzing the aforementioned lab. | 3.2.12 | S11.C.3 S11.A.2 |

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|--------------------------|---|-------------|-----------------|
| 8. Rotational Kinematics | 8.01 Convert degrees, radians, arc lengths. | 3.4.12 | S11.C.3 |
| | 8.02 Define angular position, velocity, and acceleration. | 3.4.12 | S11.C.3 |
| | 8.03 Calculate angular velocity and acceleration. | 3.4.12 | S11.C.3 |
| | 8.04 Compare and contrast linear and angular formulae and related units. | 3.1.12 | S11.C.3 |
| | 8.05 Solve angular formula's for time, disp., velocity, and acceleration. | 3.4.12 | S11.C.3 |
| | 8.06 Compare and contrast tangential and centripetal acceleration. | 3.1.12 | S11.C.3 |
| | 8.07 Describe rolling motion. | 3.4.12 | S11.C.3 |
| | 8.08 Determine rotational kinetic energy and inertia. | 3.4.12 | S11.C.3 S11.C.2 |
| | 8.09 Apply the theory of conservation of energy to rotating objects. | 3.4.12 | S11.C.3 S11.C.2 |
| | 8.10 Apply principles of this unit to everyday life. | 3.8.12 | S11.C.3 |
| | 8.11 Perform a lab that studies the relationships involved in this unit. | 3.7.12 | S11.C.3 S11.A.2 |
| | 8.12 Write a lab report analyzing the aforementioned lab. | 3.2.12 | S11.C.3 S11.A.2 |