



<u>Course Title:</u>		<b>College Physics</b>
<p><u>Description:</u> Physics is an advanced two-semester science course that is taught by experimentation in the lab. The first semester consists of the study of force, rectilinear motion, curvilinear motion, work, power and energy. The second semester consists of the study of wave motion, sound, light, optics interference and diffraction. An engineering project is required each quarter. Physics corresponds to PHY160 in DMACC's course guide.</p>		
<b><u>Reporting Topic</u></b>	<b><u>Course Level Standards</u></b>	<b><u>Competency Statement</u></b>
<b><u>Engineering</u></b>	<ul style="list-style-type: none"> <li>• Incorporate physics concepts into engineering challenges. (College_Physics.ENG1.1)</li> </ul>	Students will demonstrate creativity, collaboration, logical reasoning and problem solving while applying physics to engineering projects.
<b><u>Math Foundations</u></b>	<ul style="list-style-type: none"> <li>• Use applicable measuring standards and practices. (College_Physics.MF1.1)</li> <li>• Interpret mathematical relationships and conduct mathematical manipulation and analysis. (College_Physics.MF1.2)</li> <li>• Apply vector calculations to a variety of physics problems. (College_Physics.MF1.3)</li> </ul>	Students will apply measuring techniques, math manipulations and calculate and evaluate vectors.
<b><u>1D Motion</u></b>	<ul style="list-style-type: none"> <li>• Interpret and calculate the motion of bodies. (College_Physics.1DM2.1)</li> <li>• Graphically analyze the motion of bodies. (College_Physics.1DM2.2)</li> <li>• Use Newton's Laws to describe the workings of the universe. (College_Physics.1DM2.3)</li> </ul>	Students will apply the 3 equations of uniform acceleration and Newton's 3 laws to a variety of situations which include free-fall problems.
<b><u>Forces</u></b>	<ul style="list-style-type: none"> <li>• Mathematically draw force body diagrams to analyze the interaction of forces. (College_Physics.F3.1)</li> <li>• Mathematically solve for static equilibrium of a body system. (College_Physics.F3.2)</li> </ul>	Students will draw and apply Force (Free) Body Diagrams (FBD) to a variety of concurrent and parallel force problems including equilibrant, resolution, friction, boom-chain and inclined plane type problems.
<b><u>2D Motion</u></b>	<ul style="list-style-type: none"> <li>• Describe and calculate the trajectories of various bodies. (College_Physics.2DM4.1)</li> </ul>	Students will mathematically describe the circular and rotational motion of objects



	<ul style="list-style-type: none"><li>• Calculate circular motion of various bodies including orbital dynamics. (College_Physics.2DM4.2)</li><li>• Analyze and calculate the rotational motion and torques of bodies not in static equilibrium. (College_Physics.2DM4.3)</li></ul>	including orbital physics and Kepler's 3 Laws.
<b><u>Energy &amp; Momentum</u></b>	<ul style="list-style-type: none"><li>• Calculate the work and power output of various systems. (College_Physics.EM5.1)</li><li>• Analyze the conservation of energy within systems. (College_Physics.EM5.2)</li><li>• Analyze the conservation of momentum vectors between colliding bodies. (College_Physics.EM5.3)</li></ul>	Students will calculate a variety of energies such as work, potential, kinetic, rotational, elastic and electrical and demonstrate their conservations. Students will evaluate momentum problems and their conservation.
<b><u>Wave Mechanics</u></b>	<ul style="list-style-type: none"><li>• Describe the characteristics of waves and analyze their mechanics. (College_Physics.WSL6.1)</li><li>• Analyze the properties of various sounds. (College_Physics.WSL7.1)</li><li>• Analyze and calculate both absolute and relative intensities of sounds. (College_Physics.WSL7.2)</li><li>• Explain and calculate the doppler shifts in moving bodies. (College_Physics.WSL7.3)</li><li>• Describe and calculate the production of sound from musical instruments. (College_Physics.WSL7.4)</li></ul>	Students will evaluate wave mechanical problems including sound and light.
<b><u>Fluid Dynamics</u></b>	<ul style="list-style-type: none"><li>• Calculate and describe the dynamics of fluids. (College_Physics.FL9.1)</li></ul>	Students will mathematically explain the dynamics of fluids.