

Topic, Unit, Theme or Process Taught	Maine LEARNING RESULT Links (Standard and PI)	Strategies/Skills/Concepts/Secure Goals  By the end of this grade level or course, learners will be able to:	Resources  (Complete bibliographic form for required texts or resources and lists of supplementary resources)	Assessments and Major Assignments  (Tests, quizzes, projects, papers, homework, labs, etc.)
Systems	A1a,b	a. Analyze a system using principles including boundaries, subsystems, inputs, outputs, feedback, or the system’s relation to other systems, to explain phenomena, and design solutions to a problem. b. Explain how it may not always be possible to predict the impact of changing some part of a human-made or natural system.	2004- <u>Physical Science: Concepts in Action</u> , Prentice Hall-Chapters 1-8  <u>Introductory Physical Science</u> , 6 <sup>th</sup> edition, Haber-Schaine, 1994  Newspapers  TOPS Learning Systems Modules on <ul style="list-style-type: none"> <li>• Heat</li> <li>• Machines</li> <li>• Air Pressure</li> </ul> Spectroanalysis Kit	
Constancy and Change	A3	Students identify examples of phenomena that result from varying types and rates of change in physical, biological, and technological systems with and without counterbalances.		
Scale	A4	Students apply understanding of scale to explain phenomena in physical, biological, and technological systems. <ol style="list-style-type: none"> <li>a. Give examples of how large changes of scale may change how physical and biological systems work.</li> </ol>		

<b>Skills and Traits of Scientific Inquiry</b>	<b>B1a-c</b>	<ul style="list-style-type: none"> <li>a. Identify questions, concepts, and testable hypotheses that guide scientific investigations.</li> <li>b. Design and safely conduct methodical scientific investigations, including controlled experiments. Use statistics to analyze and interpret results.</li> <li>c. Use a variety of tools and technologies to improve investigations and communications.</li> </ul>		
<b>Understandings of Inquiry</b>  <b>Understandings About Science and Technology</b>  <b>Science, Technology and Society</b>	<b>C1</b>  <b>C2</b>  <b>C3</b>	<ul style="list-style-type: none"> <li>a. Describe how hypotheses as well as past and present knowledge guide and influence scientific investigations.</li> <li>b. Describe how scientists defend their evidence and explanations using logical arguments and verifiable results.</li> </ul> <p>Describe how science and technology are pursued for different purposes and have different impacts on humans.</p> <p>Describe how natural ecosystems provide processes that affect humans, how humans are changing some of these processes, and the possible impacts on humans.</p> <p>Describe humans' vulnerability to natural and human-induced hazards, assess potential dangers and risks, and describe short and long term changes that result in hazards for individuals and</p>		

<b>History and Nature of Science</b>	<b>C4</b>	<p>society.</p> <p>Provide examples of criteria that distinguish scientific explanations from pseudoscientific ones.</p>		
<b>Universe and Solar System</b>	<b>D1b,c</b>	<p>Explain the role of gravity in forming and maintaining planets, stars, and the solar system.</p> <p>Outline the age, origin and process of formation of the universe as currently understood by science.</p>		
<b>Earth</b>	<b>D2</b>	<p>Explain how solar radiation, ocean currents, and atmospheric conditions influence the habitability of life on Earth.</p> <p>Describe factors that influence plate tectonics and how it shapes and alters Earth's systems.</p> <p>Explain how plate tectonics influence the geochemical cycles and the formation of the Earth's surface.</p>		
<b>Matter and Energy</b>	<b>D3</b>	<p>Describe how light is emitted and absorbed by atoms changing energy levels, the results of which can be used to identify a substance.</p> <p>Describe factors that affect the rate of chemical reactions.</p> <p>Explain why in energy transformations the total amount of energy remains the same but heat is usually produced and spreads out causing a loss of useful energy.</p>		

<b>Ecosystems</b>	<b>E2</b>	Describe how energy and the chemical elements that make up molecules are transformed in ecosystems, and how they obey basic conservation laws, and explain the crucial role of photosynthesis.		
-------------------	-----------	--	--	--