

Statewide Manufacturing Curriculum Contextualized Science Module

Students will:

OUTCOMES	CONTENT	ACTIVITIES/RESOURCES	ASSESSMENT
<p>6. Define work and compute common equations for measuring work</p>	<p>Work First Law of Thermodynamics Work-energy Joule</p>	<ul style="list-style-type: none"> • Experiment 17: Work, Energy Transfer and Power, <i>Liberal Arts Physics</i>. (2003). A. Hobson, M. Baehr, E. Swallow. Prentice Hall. • http://hyperphysics.phy-astr.gsu.edu/hbase/thermo/firlaw.html • http://lyricsplayground.com/alpha/songs/f/firstandsecondlaw.shtml 	<p>Lab Question answers graded</p>
<p>7. Graph temperature transfer as a function of time and calculate the specific heat capacity of materials</p>	<p>Temperature Scales and measurements Thermodynamics Examples of Temperature Heat Capacities of various materials Heat Engines and Refrigerators</p>	<ul style="list-style-type: none"> • Definition of Celsius, Kelvin, Fahrenheit • Definition and explanation of thermodynamics • Examples of temperature (boiling, freezing, absolute zero) • Experiment 18: Temperature and Heating, <i>Liberal Arts Physics</i>. (2003). A. Hobson, M. Baehr, E. Swallow. Prentice Hall. • Experiment 19: Specific Heat Capacities of Various Materials, <i>Liberal Arts Physics</i>. (2003). A. Hobson, M. Baehr, E. Swallow. Prentice Hall. • Experiment 20: Heat Engines and Refrigerators, <i>Liberal Arts Physics</i>. (2003). A. Hobson, M. Baehr, E. Swallow. Prentice Hall. • http://www.science-projects.com/HeatCapacity.htm#one 	<p>Lab Question answers graded</p> <p>Lab Question answers graded</p> <p>Lab Question answers graded</p>
<p>8. Demonstrate energy awareness and calculate conservation of energy</p>	<p>Kinetic Electromagnetic Thermal Potential Energy uses Conservation of energy</p>	<ul style="list-style-type: none"> • Definition of kinetic, electromagnetic, thermal and potential energy • Experiment 21: Energy Awareness, <i>Liberal Arts Physics</i>. (2003). A. Hobson, M. Baehr, E. Swallow. Prentice Hall. • Experiment 22: How Much Energy is Saved by Turning Down the Thermostat?, <i>Liberal Arts Physics</i>. (2003). A. Hobson, M. Baehr, E. Swallow. Prentice Hall. 	<p>Lab Question answers graded</p>

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Students will:

OUTCOMES	CONTENT	ACTIVITIES/RESOURCES	ASSESSMENT
8. (Continued)		<ul style="list-style-type: none"> • http://www.uwsp.edu/cnr/wcee/keep/Mod1/Rules/EnConversion.htm • i-Pathways: <i>Science</i>—Unit 3: Physical Science—Lesson 3: Motion and Forces • i-Pathways: <i>Science</i>—Unit 3: Physical Science—Lesson 4: Interactions of Energy and Matter 	Lab Question answers graded
9. Plot Wave Characteristics	Amplitude Period Wavelength Frequency Speed	<ul style="list-style-type: none"> • Definition of amplitude, period, wavelength, frequency speed • Experiment 24: Waves and Wave Characteristics, <i>Liberal Arts Physics</i>. (2003). A. Hobson, M. Baehr, E. Swallow. Prentice Hall. • http://www.colorado.edu/physics/phys1140/phys1140_fa01/Experiments/M2/M2.html • i-Pathways: <i>Science</i>—Unit 3: Physical Science—Lesson 3: Motion and Forces • i-Pathways: <i>Science</i>—Unit 3: Physical Science—Lesson 4: Interactions of Energy and Matter 	Lab Question answers graded
10. Calculate and measure volts, ohms and amperes in series and parallel circuits	Current Potential Resistance Ohm's law Series Circuits Parallel Circuits	<ul style="list-style-type: none"> • Define current, resistance, and potential difference. • Demonstrate calculations for Ohm's law for series circuits • Experiment 26: Series Electrical Circuits, <i>Liberal Arts Physics</i>. (2003). A. Hobson, M. Baehr, E. Swallow. Prentice Hall. • Demonstrate calculations for Ohm's law for parallel circuits • Experiment 27: Parallel Electrical Circuits, <i>Liberal Arts Physics</i>. (2003). A. Hobson, M. Baehr, E. Swallow. Prentice Hall. • http://www.allaboutcircuits.com/vol_1/chpt_5/1.html# • i-Pathways: <i>Science</i>—Unit 3: Physical Science—Lesson 3: Motion and Forces • i-Pathways: <i>Science</i>—Unit 3: Physical Science—Lesson 4: Interactions of Energy and Matter 	Lab Question answers graded Lab Question answers graded