

**Texas Technology Education Standards- Scientific 8.0**  
**Principles of Technology I with *Physics in Context***  
**Texas students in grades 10-12 one-science credits.**

**C. Knowledge and Skills:**

<p><b>1. The student uses a systems approach to investigate mechanical, fluid, electrical, and thermal systems. <i>The student is expected to:</i></b></p>	<p>Embedded in Student Text, Teachers Guide, Lab Manuals, Assessment CD &amp; Web-site support materials  <a href="http://WWW.learningincontext.com">WWW.learningincontext.com</a></p>
<p>a. Apply the universal systems model to technological activities; and</p>	<p>Embedded in Student Text, Teachers Guide, Lab Manuals, Assessment CD &amp; Web-site support materials  <a href="http://WWW.learningincontext.com">WWW.learningincontext.com</a></p>
<p>b. Identify the inputs, processes, outputs and feedback associated with each of the systems.</p>	<p>Embedded in Student Text, Teachers Guide, Lab Manuals, Assessment CD &amp; Web-site support materials  <a href="http://WWW.learningincontext.com">WWW.learningincontext.com</a></p>
<p><b>2. The student works safely with mechanical, fluid, electrical, and thermal technology. <i>The student is expected to:</i></b></p>	<p>Embedded in Student Text, Teachers Guide, Lab Manuals, Assessment CD &amp; Web-site support materials  <a href="http://WWW.learningincontext.com">WWW.learningincontext.com</a></p>
<p>a. Master relevant safety tests:</p>	<p>Embedded in Student Text, Teachers Guide, Lab Manuals, Assessment CD &amp; Web-site support materials  <a href="http://WWW.learningincontext.com">WWW.learningincontext.com</a></p>
<p>b. Follow safety manuals. Instructions, and requirements; and</p>	<p>Embedded in Student Text, Teachers Guide, Lab Manuals, Assessment CD &amp; Web-site support materials  <a href="http://WWW.learningincontext.com">WWW.learningincontext.com</a></p>
<p>c. Make prudent choices in the conservation and use of resources and the disposal of materials.</p>	<p>Embedded in Student Text, Teachers Guide, Lab Manuals, Assessment CD &amp; Web-site support materials  <a href="http://WWW.learningincontext.com">WWW.learningincontext.com</a></p>
<p><b>3. The student solves problems, thinks critically, and makes decisions related to technology. <i>The student is expected to:</i></b></p>	<p>Embedded in Student Text, Teachers Guide, Lab Manuals, Assessment CD &amp; Web-site support materials  <a href="http://WWW.learningincontext.com">WWW.learningincontext.com</a></p>
<p>a. Use specified problem-solving strategies;</p>	<p>Embedded in Student Text, Teachers Guide, Lab Manuals, Assessment CD &amp; Web-site support materials  <a href="http://WWW.learningincontext.com">WWW.learningincontext.com</a></p>

b. Apply critical-thinking strategies;	Embedded in Student Text, Teachers Guide, Lab Manuals, Assessment CD & Web-site support materials <a href="http://WWW.learningincontext.com">WWW.learningincontext.com</a>
c. Apply decision-making techniques to the selection of technical solutions and	Embedded in Student Text, Teachers Guide, Lab Manuals, Assessment CD & Web-site support materials <a href="http://WWW.learningincontext.com">WWW.learningincontext.com</a>
d. Evaluate the impact of technology on scientific thought, society and the environment.	Embedded in Student Text, Teachers Guide, Lab Manuals, Assessment CD & Web-site support materials <a href="http://WWW.learningincontext.com">WWW.learningincontext.com</a>
<b>4. The student applies communication, science, and mathematics knowledge and skills to technological activities. <i>The student is expected to:</i></b>	Embedded in Student Text, Teachers Guide, Lab Manuals, Assessment CD & Web-site support materials <a href="http://WWW.learningincontext.com">WWW.learningincontext.com</a>
a. Prepare technical reports and presentations;	Embedded in Student Text, Teachers Guide, Lab Manuals, Assessment CD & Web-site support materials <a href="http://WWW.learningincontext.com">WWW.learningincontext.com</a>
b. Solve algebraic equations	Embedded in Student Text, Teachers Guide, Lab Manuals, Assessment CD & Web-site support materials <a href="http://WWW.learningincontext.com">WWW.learningincontext.com</a>
c. Solve problems in English and System International (SI) units; and	Embedded in Student Text, Teachers Guide, Lab Manuals, Assessment CD & Web-site support materials <a href="http://WWW.learningincontext.com">WWW.learningincontext.com</a>
d. Perform unit conversions.	Embedded in Student Text, Teachers Guide, Lab Manuals, Assessment CD & Web-site support materials <a href="http://WWW.learningincontext.com">WWW.learningincontext.com</a>
<b>5. The student knows the laws governing motion. <i>The student is expected to:</i></b>	Student Text pp. 4-26, 170-183, 326-350; Teachers Guide pp T4-26, T170-183, T326-350; Lab manual pp. 1.3-1.10, 4.3-4.8, 7.3-7.12; Appropriate sections in the Assessment CD & Web-site: <a href="http://www.learningincontext.com">www.learningincontext.com</a> .
a. Analyze examples of uniform and accelerated motion, linear, projectile, and circular motion;	Student Text pp. 4-26, 170-183, 326-350; Teachers Guide pp T4-26, T170-183, T326-350; Lab manual pp. 1.3-1.10, 4.3-4.8, 7.3-7.12; Appropriate sections in the

	Assessment CD & Web-site: <a href="http://www.learningincontext.com">www.learningincontext.com</a> .
b. Generate and interpret graphs describing motion, including the use of real time technology;	Student Text pp. 4-26, 170-183, 326-350; Teachers Guide pp T4-26, T170-183, T326-350; Lab manual pp. 1.3-1.10, 4.3-4.8, 7.3-7.12; Appropriate sections in the Assessment CD & Web-site: <a href="http://www.learningincontext.com">www.learningincontext.com</a> .
c. Formulate the effects of forces on the motion of objects.	Student Text pp. 4-26, 170-183, 326-350; Teachers Guide pp T4-26, T170-183, T326-350; Lab manual pp. 1.3-1.10, 4.3-4.8, 7.3-7.12; Appropriate sections in the Assessment CD & Web-site: <a href="http://www.learningincontext.com">www.learningincontext.com</a> .
d. Develop and interpret a free-body diagram for force analysis; and	Student Text pp. 4-26, 170-183, 326-350; Teachers Guide pp T4-26, T170-183, T326-350; Lab manual pp. 1.3-1.10, 4.3-4.8, 7.3-7.12; Appropriate sections in the Assessment CD & Web-site: <a href="http://www.learningincontext.com">www.learningincontext.com</a> .
e. Identify and describe motion relative to different frames of reference.	Student Text pp. 4-26, 170-183, 326-350; Teachers Guide pp T4-26, T170-183, T326-350; Lab manual pp. 1.3-1.10, 4.3-4.8, 7.3-7.12; Appropriate sections in the Assessment CD & Web-site: <a href="http://www.learningincontext.com">www.learningincontext.com</a> .
<b>6. The student knows the concept of force.</b> <i>The student is expected to:</i>	Student Text pp. 4-81, Teachers Guide pp T4-81; Lab Manual pp. 1.1-1.36 Appropriate sections in the Assessment CD & Web-site: <a href="http://www.learningincontext.com">www.learningincontext.com</a> .
a. Apply examples of complex technological devices where force must be controlled, measured or applied;	Student Text pp. 4-81, Teachers Guide pp T4-81; Lab Manual pp. 1.1-1.36 Appropriate sections in the Assessment CD & Web-site: <a href="http://www.learningincontext.com">www.learningincontext.com</a> .
b. Analyze the relationship among force, pressure, voltage and temperature.	Student Text pp. 4-81, Teachers Guide pp T4-81; Lab Manual pp. 1.1-1.36 Appropriate sections in the Assessment CD & Web-site: <a href="http://www.learningincontext.com">www.learningincontext.com</a> .
c. Evaluate and predict what happens to an object when forces on it are balanced and when forces on it are unbalanced; and	Student Text pp. 4-81, Teachers Guide pp T4-81; Lab Manual pp. 1.1-1.36 Appropriate sections in the Assessment CD & Web-site: <a href="http://www.learningincontext.com">www.learningincontext.com</a> .
d. Measure force in mechanical, fluid,	Student Text pp. 4-81, Teachers Guide pp

electrical and thermal systems.	T4-81; Lab Manual pp. 1.1-1.36 Appropriate sections in the Assessment CD & Web-site: <a href="http://www.learningincontext.com">www.learningincontext.com</a> .
<b>7. The student knows the concept of work.</b> <i>The student is expected to:</i>	Student Text pp. 82-119, Teachers Guide pp T82-119, Lab Manual pp 2.1-2.33; Student Text pp. 4-81, Teachers Guide pp T4-81; Lab Manual pp. 1.1-1.36 Appropriate sections in the Assessment CD & Web-site: <a href="http://www.learningincontext.com">www.learningincontext.com</a> .
a. Relate mechanical, fluid, and electrical systems to force and movement and	Student Text pp. 82-119, Teachers Guide pp T82-119, Lab Manual pp 2.1-2.33; Student Text pp. 4-81, Teachers Guide pp T4-81; Lab Manual pp. 1.1-1.36 Appropriate sections in the Assessment CD & Web-site: <a href="http://www.learningincontext.com">www.learningincontext.com</a> .
b. Identify and measure the effects of work done in mechanical, fluid, and electrical systems.	Student Text pp. 82-119, Teachers Guide pp T82-119, Lab Manual pp 2.1-2.33; Student Text pp. 4-81, Teachers Guide pp T4-81; Lab Manual pp. 1.1-1.36 Appropriate sections in the Assessment CD & Web-site: <a href="http://www.learningincontext.com">www.learningincontext.com</a> .
<b>8. The student knows the concept of rate.</b> <i>The student is expected to:</i>	Student Text pp. 120-167, Teachers Guide pp. T120-167; Lab Manual pp. 3.1-3.34; Appropriate sections in the Assessment CD & Web-site: <a href="http://www.learningincontext.com">www.learningincontext.com</a> .
a. Analyze rate in mechanical, fluid, electrical and thermal systems, and	Student Text pp. 120-167, Teachers Guide pp. T120-167; Lab Manual pp. 3.1-3.34; Appropriate sections in the Assessment CD & Web-site: <a href="http://www.learningincontext.com">www.learningincontext.com</a> .
b. Measure, verifies, and analyze rate in mechanical fluid, electrical and thermal systems.	Student Text pp. 120-167, Teachers Guide pp. T120-167; Lab Manual pp. 3.1-3.34; Appropriate sections in the Assessment CD & Web-site: <a href="http://www.learningincontext.com">www.learningincontext.com</a> .
<b>9. The student knows the concept of resistance.</b> <i>The student is expected to:</i>	Student Text pp. 168-227; Teachers Guide pp. T 168-227, Lab Manual 4.1-4.38; Appropriate sections in the Assessment CD & Web-site: <a href="http://www.learningincontext.com">www.learningincontext.com</a> .
a. Identify resistance in mechanical, fluid, electrical and thermal systems.	Student Text pp. 168-227; Teachers Guide pp. T 168-227, Lab Manual 4.1-4.38; Appropriate sections in the Assessment CD & Web-site: <a href="http://www.learningincontext.com">www.learningincontext.com</a> .
b. Relate the principle of force divided by rate to resistance in each energy system; and	Student Text pp. 168-227; Teachers Guide pp. T 168-227, Lab Manual 4.1-4.38;

to resistance in each energy system; and	Appropriate sections in the Assessment CD & Web-site: <a href="http://www.learningincontext.com">www.learningincontext.com</a> .
c. Measure, verifies, and analyzes resistance in mechanical, fluid, electrical and thermal systems.	Student Text pp. 168-227; Teachers Guide pp. T 168-227, Lab Manual 4.1-4.38; Appropriate sections in the Assessment CD & Web-site: <a href="http://www.learningincontext.com">www.learningincontext.com</a> .
<b>10. The student knows the concept of energy. <i>The student is expected to:</i></b>	Student Text pp. 228-295, Teachers Guide pp. T228-295; Lab Manual 5.1-5.40; Appropriate sections in the Assessment CD & Web-site: <a href="http://www.learningincontext.com">www.learningincontext.com</a> .
a. Identify the nature of energy	Student Text pp. 228-295, Teachers Guide pp. T228-295; Lab Manual 5.1-5.40; Appropriate sections in the Assessment CD & Web-site: <a href="http://www.learningincontext.com">www.learningincontext.com</a> .
b. Relate potential energy, kinetic energy, and heat energy to the conservation of energy;	Student Text pp. 228-295, Teachers Guide pp. T228-295; Lab Manual 5.1-5.40; Appropriate sections in the Assessment CD & Web-site: <a href="http://www.learningincontext.com">www.learningincontext.com</a> .
c. Distinguish between work and energy	Student Text pp. 228-295, Teachers Guide pp. T228-295; Lab Manual 5.1-5.40; Appropriate sections in the Assessment CD & Web-site: <a href="http://www.learningincontext.com">www.learningincontext.com</a> .
d. Measure, verify, and analyze energy in each system; and	Student Text pp. 228-295, Teachers Guide pp. T228-295; Lab Manual 5.1-5.40; Appropriate sections in the Assessment CD & Web-site: <a href="http://www.learningincontext.com">www.learningincontext.com</a> .
e. Evaluate different methods of energy transfer that result in an increasing amount of disorder.	Student Text pp. 228-295, Teachers Guide pp. T228-295; Lab Manual 5.1-5.40; Appropriate sections in the Assessment CD & Web-site: <a href="http://www.learningincontext.com">www.learningincontext.com</a> .
<b>11. The student knows the concept of power. <i>The student is expected to:</i></b>	Student Text pp. 296-323; Teachers Guide pp. T 296-323; Lab Manual pp. 6.1-6.30; Appropriate sections in the Assessment CD & Web-site: <a href="http://www.learningincontext.com">www.learningincontext.com</a> .
a. Define power in mechanical, fluid, electrical and thermal systems; and	Student Text pp. 296-323; Teachers Guide pp. T 296-323; Lab Manual pp. 6.1-6.30; Appropriate sections in the Assessment CD & Web-site: <a href="http://www.learningincontext.com">www.learningincontext.com</a> .
b. Relate the principle of work divided by time to each energy system.	Student Text pp. 296-323; Teachers Guide pp. T 296-323; Lab Manual pp. 6.1-6.30; Appropriate sections in the Assessment CD & Web-site: <a href="http://www.learningincontext.com">www.learningincontext.com</a> .

<p><b>12. The student knows the concept of energy transformations. <i>The student is expected to:</i></b></p>	<p>Embedded in Chapter 5 of the Student Text, Teachers Guide, Lab Manuals, Assessment CD &amp; Web-site support materials  <a href="http://WWW.learningincontext.com">WWW.learningincontext.com</a></p>
<p>a. Observe and describe examples of kinetic and potential energy in mechanical, fluid, and electrical systems. And</p>	<p>Embedded in Student Text, Teachers Guide, Lab Manuals, Assessment CD &amp; Web-site support materials  <a href="http://WWW.learningincontext.com">WWW.learningincontext.com</a></p>
<p>b. Compare examples of energy transformations in mechanical, fluid, and electrical systems,</p>	<p>Embedded in Student Text, Teachers Guide, Lab Manuals, Assessment CD &amp; Web-site support materials  <a href="http://WWW.learningincontext.com">WWW.learningincontext.com</a></p>