

Project Lead the Way: Biotechnical Engineering™

National Science Education Standards

<p>Key: √ denotes a correlation in ideas and concepts in both standards and lessons. x denotes the ideas and concepts may not be directly addressed, but the ideas are supported in both lessons and activities • denotes an implied idea or concept that may be used in both lesson and activity</p> <p>NSES Content Standard K-12: Unifying Concepts and Processes As a result of activities in grades K-12, all students should develop understanding and abilities aligned with the following concepts and processes—</p>	Unit 1 Safety & Document Review	Unit 2 Introduction to Biotechnical Engineering	Unit 3 Biochemical Engineering	Unit 4 Environmental & Agricultural Engineering	Unit 5 Biomedical Engineering
<ul style="list-style-type: none"> Systems, order, and organization 				x	x
<ul style="list-style-type: none"> Evidence, models, and explanation 		√	√	√	√
<ul style="list-style-type: none"> Change, constancy, and measurement 	•	•	x	x	x
<ul style="list-style-type: none"> Evolution and equilibrium 					
<ul style="list-style-type: none"> Form and function 			x	x	x
<p>NSES Content Standard A: Science As Inquiry As a result of activities in grades 9-12, all students should develop—</p>					
<ul style="list-style-type: none"> Abilities necessary to do scientific inquiry 		x	x	x	x
<ul style="list-style-type: none"> Understandings about scientific inquiry 		•	•	•	•

NSES Content Standard B: Physical Science As a result of activities in grades 9-12, all students should develop an understanding of—					
• Structure of atoms			x		
• Structure and properties of matter			x	x	√
• Chemical reactions				x	
• Motions and forces				x	√
• Conservation of energy and increase in disorder				x	
• Interactions of energy and matter					
NSES Content Standard C: Life Science As a result of activities in grades 9-12, all students should develop an understanding of—					
• The cell			•		•
• Molecular basis of heredity			√		•
• Biological evolution					
• Interdependence of organisms		x	•	•	
• Matter, energy, and organization in living systems		x	•	•	•
• Behavior of organisms					
NSES Content Standard E: Science and Technology As a result of activities in grades 9-12, all students should develop—					
• Abilities of technological design		√	√	√	√
• Understandings about science and technology		√	√	√	√

NSES Content Standard F: Science in Personal and Social Perspectives As a result of activities in grades 9-12, all students should develop understanding of—					
• Personal and community health				X	•
• Population growth				X	
• Natural resources				X	
• Environmental quality				X	
• Natural and human-induced hazards				X	
• Science and technology in local, national, and global challenges				X	
NSES Content Standard G: History and Nature of Science As a result of activities in grades 9-12, all students should develop understanding of—					
• Science as a human endeavor		√			
• Nature of scientific knowledge		√			
• Historical perspectives		√			

Table 1. Comparison of *National Science Education Standards (NSES)* and Project Lead The Way® Biotechnical Engineering™.

[Source: National Research Council \(NRC\) National Science Education Standards.](#)