

TechCenter21: Technology Education Pennsylvania – Science and Technology Standards (7th Grade)

Instructional Content Areas (Modules)

Introduction to Technology

Aerodynamic Principles

Aerospace

Alternate Energy

Biosphere

CAM/CNC Mill

Communications

Construction & CAD

Desktop Publishing

Electronics & Control

Engineering Structures

Environmental Management

Graphic Design

Hydraulics

Lasers & Fiber Optics

Manufacturing/Automation

Mechanisms

Multimedia Basics

Pneumatics

Power & Energy

Road Transportation

Robotics

Video Production

Waste Management

Weather Monitoring

CO₂ Race Car Design

Structure Design for Earthquake



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Science and Technology Standards (7th Grade)	TechCenter21 Course	Introduction Unit	Aerodynamics	Aerospace	Alternate Energy	Biosphere	CAM/CNC Milling	Communications	Construction/CAD	Desktop Publishing	Electronic Control	Engineer Structures	Environmental Management	Graphic Design	Hydraulics	Lasers and Fiber Optic	Manufacturing & Automation	Mechanism	Multimedia	Pneumatics	Power and Energy	Road Transportation	Robotics	Video Production	Waste Mgt.	Weather	CO ₂ Race Car Design	Structure Design Earthquakes	
	3.1. Unifying Themes																												
A. Explain the parts of a simple system and their relationship to each other.	✓	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X		X	X	X	
B. Describe the use of models as an application of scientific or technological concepts.	✓		X	X	X	X		X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X		X	X	X	
C. Identify patterns as repeated processes or recurring elements in science and technology.	✓						X	X				X		X			X	X				X		X				X	
D. Explain scale as a way of relating concepts and ideas to one another by some measure.	✓		X	X	X		X		X			X			X				X				X				X	X	
E. Identify change as a variable in describing natural and physical systems.	✓		X	X	X	X		X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X		X			
3.2. Inquiry and Design																													
A. Explain/apply scientific & technological knowledge.	✓		X	X	X	X		X	X	X	X	X	X		X		X	X	X	X	X	X	X	X	X	X	X	X	
B. Apply process knowledge to make and interpret observations.	✓		X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X		X	X	X
C. Identify and use the elements of scientific inquiry to solve problems.	✓		X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X
D. Know and use the technological design processes to solve problems.	✓		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
3.6. Technology Education																													
A. Explain biotechnologies that relate to related technologies of propagating, growing, maintaining, adapting, treating and converting.	✓			X	X	X							X						X			X	X			X			
B. Explain information technologies of encoding, transmitting, receiving, storing, retrieving & decoding.	✓							X	X	X			X			X		X	X						X				
C. Explain physical technologies of structural design, analysis and engineering, personnel relations, financial affairs, structural production, marketing, research and design.	✓		X	X			X	X	X		X	X	X		X		X	X	X		X		X	X		X	X	X	

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	3.7. Technological Devices																											
A. Describe the safe and appropriate use of tools, materials and techniques to answer questions and solve problems	✓		X	X	X	X	X	X	X		X	X	X		X	X	X	X			X	X	X	X	X	X	X	X
B. Use instruments and apparatus to study materials	✓		X	X	X	X	X	X	X	X	X	X	X	X	X		X	X		X	X	X	X	X	X	X	X	X
C. Explain and demonstrate basic computer operations and concepts.	✓		X	X	X	X	X	X	X	X	X	X	X	X	X		X	X		X	X	X	X	X	X	X	X	
D. Apply computer s/w to solve specific problems.	✓		X				X	X	X	X		X	X	X				X		X			X	X	X	X		
E. Explain basic computer communications systems.	✓							X																	X			
3.8. Science, Technology and Human Endeavors																												
A. Explain how sciences and technologies are limited in their effects and influences on society.	✓		X	X	X	X		X	X	X	X	X	X		X		X	X		X	X	X	X	X		X		X
B. Explain how human ingenuity and technological resources satisfy specific human needs and improve the quality of life.	✓		X		X	X		X	X	X	X	X	X		X		X	X	X		X	X				X		X
C. Identify the pros and cons of applying technological and scientific solutions to address problems and the effect upon society.	✓		X	X	X	X		X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X		X		X