

Appendix: STEM Standards and Practices

Next Generation Science Standards (NGSS)

<https://www.nextgenscience.org/>

Alignment of Activities With NGSS Disciplinary Core Ideas				
Motion and Stability (MS) Standard	Assess the Structural Integrity of a Space Module	Design and Build a Space Habitat	Experiment With Water Filtration	Test Materials for Radiation Shielding
Forces and Interactions				
MS-PS2-1		✓		
Waves and Their Applications in Technologies and Information Transfer				
MS-PS4-2				✓
Engineering Design				
MS-ETS1-1	✓	✓		
MS-ETS1-2			✓	
MS-ETS1-3	✓	✓		
MS-ETS1-4			✓	
Ecosystems: Interactions, Energy, and Dynamics				
MS-LS2-1			✓	
MS-LS2-5			✓	

Alignment of Activities With NGSS Crosscutting Concepts				
Concept	Assess the Structural Integrity of a Space Module	Design and Build a Space Habitat	Experiment With Water Filtration	Test Materials for Radiation Shielding
Patterns				
Cause and Effect	✓	✓	✓	✓
Scale, Proportion, and Quantity				
System and System Models	✓	✓		
Energy and Matter				
Structure and Function				✓
Stability and Change			✓	
Interdependence of Science, Engineering, and Technology	✓	✓		
Influence of Engineering, Technology, and Science on Society and the Natural World			✓	

Habitation With Gateway

NGSS Science and Engineering Practices

<https://ngss.nsta.org/PracticesFull.aspx>

Alignment of Activities With NGSS Science and Engineering Practices				
Practice	Assess the Structural Integrity of a Space Module	Design and Build a Space Habitat	Experiment With Water Filtration	Test Materials for Radiation Shielding
Asking Questions and Defining Problems	✓	✓		
Developing and Using Models	✓	✓	✓	
Planning and Carrying Out Investigations	✓	✓		✓
Analyzing and Interpreting Data			✓	✓
Using Mathematics and Computational Thinking				
Constructing Explanations and Designing Solutions	✓			
Engaging in Argument From Evidence			✓	✓
Obtaining, Evaluating, and Communicating Information				

International Society for Technology in Education (ISTE) Standards for Students

<https://www.iste.org/standards/for-students>

Alignment of Activities With ISTE Standards for Students				
Standard	Assess the Structural Integrity of a Space Module	Design and Build a Space Habitat	Experiment With Water Filtration	Test Materials for Radiation Shielding
Knowledge Constructor				
3d			✓	✓
Innovative Designer				
4a	✓	✓		
4c		✓		
4d	✓	✓		✓
Computational Thinker				
5c	✓	✓	✓	
Global Collaborator				
7c	✓	✓	✓	

Common Core State Standards (CCSS) for Mathematics

<http://www.corestandards.org/Math/>

Alignment of Activities With CCSS Grade Level Content Standards by Domain				
Standard	Assess the Structural Integrity of a Space Module	Design and Build a Space Habitat	Experiment With Water Filtration	Test Materials for Radiation Shielding
6th Grade				
CCSS.MATH.CONTENT.6.NS.B.3	✓			
CCSS.MATH.CONTENT.6.SP.B.5	✓	✓	✓	
7th Grade				
CCSS.MATH.CONTENT.7.G.B.6		✓		
8th Grade				

Alignment of Activities With CCSS Standards for Mathematical Practice				
Practice	Assess the Structural Integrity of a Space Module	Design and Build a Space Habitat	Experiment With Water Filtration	Test Materials for Radiation Shielding
CCSS.MATH.PRACTICE.MP1	✓	✓		
CCSS.MATH.PRACTICE.MP2			✓	
CCSS.MATH.PRACTICE.MP3	✓	✓	✓	✓
CCSS.MATH.PRACTICE.MP4				
CCSS.MATH.PRACTICE.MP5	✓	✓	✓	✓
CCSS.MATH.PRACTICE.MP6	✓	✓	✓	
CCSS.MATH.PRACTICE.MP7				
CCSS.MATH.PRACTICE.MP8				