

EDUCATIONAL STANDARDS FRAMEWORK

# Space Station — Competitive Coverage Heat Map

Habitat & systems design — the most arts- and ELA-rich lesson.

LESSON 07 · SPACE STATION

FRAMEWORKS TOUCHED

**8 / 8**

Full multi-disciplinary reach

STANDARDS ALIGNED

**24**

Discrete benchmarks scored

COMPOSITE COVERAGE

**85%**

Weighted intensity, all standards

DOMINANT STRAND

**P21 4Cs · ISTE EdTech**

Top two framework averages

COVERAGE INTENSITY 0 · None > 1 · Light > 2 · Moderate > 3 · Strong > 4 · Very Strong > 5 · Core / Dominant

## Coverage by Framework

Average heat score per category (0–5)



## Standard-by-Standard Heat Map

Each row = one benchmark · color & bar = relevance to this lesson

| FRAMEWORK                 | STANDARD  | HEAT | INTENSITY                |
|---------------------------|---|------|--------------------------|
| NGSS<br>Next Gen Science  | <b>Engineering Design</b><br>3-5-ETS1-2<br>Generate and compare multiple solutions to space-travel and space station engineering challenges.              | 5    | 100% · Core / dominant   |
|                           | <b>Physical Science</b><br>4-PS3-2<br>Evidence that energy can be transferred and transformed (e.g., station power systems and life-support energy flow). | 3    | 60% · Moderately covered |
|                           | <b>Waves &amp; Information</b><br>4-PS4-3<br>Integrate visual and sound-based data during space experiments and space station simulations.                | 4    | 80% · Strongly covered   |
| ISTE<br>EdTech Standards  | <b>Knowledge Constructor</b><br>ISTE 3<br>Curate space-science info and prototype digital/physical models like stations and habitats.                     | 5    | 100% · Core / dominant   |
|                           | <b>Creative Communicator</b><br>ISTE 6<br>Use multimedia tools to explain mission concepts and space station results.                                     | 4    | 80% · Strongly covered   |
|                           | <b>Global Collaborator</b><br>ISTE 7<br>Collaborate digitally to simulate missions and share space station findings.                                      | 4    | 80% · Strongly covered   |
| CSTA<br>Computer Science  | <b>Programming</b><br>1B-AP-15<br>Test and debug Micro:bit programs to align space station behavior with mission goals.                                   | 4    | 80% · Strongly covered   |
|                           | <b>Variables in Programming</b><br>1B-AP-10<br>Use sensor data (light, motion) to control space station outputs.  | 4    | 80% · Strongly covered   |
|                           | <b>Program Development</b><br>2-AP-14<br>Develop programs iteratively: plan, code, test, revise, reflect.   | 4    | 80% · Strongly covered   |
| CCSS.MATH<br>Mathematics  | <b>Measurement</b><br>5.MD.A.1<br>Convert measurement units during space station planning and trajectory calculations.                                    | 4    | 80% · Strongly covered   |
|                           | <b>Geometry</b><br>5.G.B.3<br>Use shapes and spatial reasoning to plan space station layout or surface simulations.                                       | 5    | 100% · Core / dominant   |
|                           | <b>Geometry — Angles</b><br>4.G.A.1<br>Define angles, lines, segments while designing space station components.   | 3    | 60% · Moderately covered |
| CCSS.ELA<br>Language Arts | <b>Informational Text</b><br>RI.4.3<br>Explain space-travel processes and purposes through research and observation.                                      | 4    | 80% · Strongly covered   |
|                           | <b>Writing</b><br>W.5.2<br>Write mission reports, design explanations, or reflection journals.  | 4    | 80% · Strongly covered   |
|                           | <b>Speaking &amp; Listening</b><br>SL.5.5<br>Present space station findings using graphics, recordings, or digital media.                                 | 4    | 80% · Strongly covered   |
|                           | <b>Responding</b>   |      |                          |

| FRAMEWORK                  | STANDARD  | HEAT | INTENSITY              |
|----------------------------|---|------|------------------------|
| NCAS<br>National Core Arts | <b>— Anchor</b><br>Interpret design aesthetics and context of space station, habitats, and terrain simulations.                 | 4    | 80% · Strongly covered |
|                            | <b>Connecting</b><br><b>— Anchor</b><br>Apply personal insights to enrich mission simulations and space station design tasks.   | 4    | 80% · Strongly covered |
|                            | <b>Creating</b><br><b>— Anchor</b><br>Design and refine space-themed visuals or models from peer feedback.                      | 5    | 100% · Core / dominant |
| P21<br>21st-Century Skills | <b>Critical Thinking</b><br><b>— 4Cs</b><br>Solve space station design and mission challenges through evidence-based reasoning. | 5    | 100% · Core / dominant |
|                            | <b>Creativity &amp; Innovation</b><br><b>— 4Cs</b><br>Brainstorm and prototype unique solutions to space station scenarios.     | 5    | 100% · Core / dominant |
|                            | <b>Collaboration</b><br><b>— 4Cs</b><br>Work in groups to plan, build, and evaluate space station tasks.                        | 5    | 100% · Core / dominant |
| SEL<br>Social-Emotional    | <b>Self-Management</b><br><b>— CASEL</b><br>Manage frustration during coding/debugging and stay focused.                        | 4    | 80% · Strongly covered |
|                            | <b>Social Awareness</b><br><b>— CASEL</b><br>Show empathy and appreciation for teammates' ideas during projects.                | 5    | 100% · Core / dominant |
|                            | <b>Responsible Decision-Making</b><br><b>— CASEL</b><br>Make ethical, environmentally conscious decisions in space-tech design. | 4    | 80% · Strongly covered |

### Strategic Read

Where the lesson dominates · where it leaves headroom

#### HOT ZONES

The kit's strongest **arts & humanities** lesson. **NCAS Creating** hits 5 (habitat design), **5.G.B.3 Spatial Geometry** peaks at 5 (station layout is explicit in the standard), the full **P21 4Cs** max out, and **SEL Social Awareness** rises to 5 from collaborative module assembly.

#### COOL ZONES

**NGSS Physical Science** dips to 3 — propulsion isn't central. Pair with a brief energy-budget activity to round out coverage.