Astronomy Exam Syllabus

Grades 9–11

The Astronomy category is structured as a four-level progression for students in Grades 3–11. Each level has a separate question booklet containing 25 questions. The syllabus follows common international K–12 Science, Earth & Space Science and introductory Physics learning progressions, with an emphasis on astronomy, space exploration and NASA-related applications.

Assessment Structure

Group	Grades	Questions
Level 1	Grades 3–4	25
Level 2	Grades 5–6	25
Level 3	Grades 7–8	25
Level 4	Grades 9–11	25

Topics

1. **Celestial Mechanics**
2. **Earth–Moon–Sun Dynamics**
3. **Solar System Formation and Evolution**
4. **Comparative Planetary Science**
5. **Electromagnetic Radiation**
6. **The Sun and Heliophysics**
7. **Stellar Structure and Evolution**
8. **Stellar Populations and the H–R Diagram**
9. **Stellar Death**
10. **The Milky Way and Galaxies**
11. **Cosmology**
12. **Exoplanets and Habitability**
13. **Telescopes and Observational Astronomy**
14. **Spaceflight and Mission Design**
15. **Modern Astronomy and Data Analysis**

Question Design Principles

- Each booklet contains 25 questions appropriate to its grade group.
- Questions should test understanding, application, observation, interpretation and problem-solving rather than memorization alone.
- Difficulty should progress from observation and basic concepts in Grades 3–4 to quantitative and evidence-based reasoning in Grades 9–11.
- Diagrams, star maps, planetary images, orbital models, spectra and simple data tables may be used.
- NASA-related examples may include rockets, spacecraft, launch systems, planetary exploration and human spaceflight, connecting naturally with the NASA Kennedy Space Center experience.

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Framework

The syllabus is designed around internationally common K–12 Earth & Space Science and Physics progressions, including concepts reflected in the Next Generation Science Standards and NASA STEM education resources. The progression moves from observable sky patterns and the Earth–Sun–Moon system toward gravity, planetary science, stellar evolution, spectra, cosmology, exoplanets and spaceflight.