



QUIZ STUDY GUIDE

StellarXplorers Practice Round 1 (PR1)

In each of the Qualifying Rounds of competition, teams can earn up to 20 points based on their completion of an online academic quiz. The quiz is taken as a team (not individually) and must be completed within the team's 6-hour competition window. There is no time limit on the quiz itself. The quiz is 20 questions (multiple choice, true/false, or matching) and each correct answer is worth 1 point. All questions are based on topics covered in **Nova Space's StellarXplorers Space Foundations course**.

Study guides are provided for each quiz to help teams prepare and maximize their quiz scores. Practice Round 1 (PR1) is the only Practice Round that includes a quiz. The PR1 quiz covers the topics in the Orbits Module:

Orbits Module

Orbital mechanics laws

- The three physicists or mathematicians whose work was the basis for orbital mechanics.
- Newton's Laws of Motion and the Laws of Conservation
- Kepler's Laws of Planetary Motion
- Understand what can impact ballistic trajectories

Classical orbital elements

- The six classical orbital elements, their definitions, and how they're applied:
 - Apogee
 - Perigee
 - Semi-major Axis
 - Inclination
 - Eccentricity
 - Right Ascension of the Ascending Node (RAAN)
- How to define a satellite's period and explain ground track

Orbit types and transfers

- Basic types of orbit around the Earth and the altitude bands that define each:
 - Low Earth Orbit (LEO)
 - Medium Earth Orbit (MEO)
 - Highly Elliptical Orbit (HEO)
 - Geosynchronous Earth Orbit (GEO)
- Benefits and drawbacks of each type of Earth orbit
- Sun Synchronous orbit and Molniya orbits and how each is defined
- Understand and identify examples of orbital perturbations
- The Hohmann transfer maneuver and when it should be used