



QUIZ STUDY GUIDE

StellarXplorers Qualification Round 3 (QR3)

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, and/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. The QR3 quiz covers the topics in the Space Environment and EMR Theory Module and the Space Mission Areas and Capabilities Module:

Space Environment and EMR Theory Module

EMR Theory and Sources

- Introduction: EMR theory and sources
- Maxwell's Equations
- Characters of electromagnetic waves
- EM energy and propagation

Space Mission Areas and Capabilities Module

Remote Sensing

- Telescope and imager parameters
- Ground Sample Distances
- Types of passive sensors
- Active Sensors

Communications

- SATCOM overview
- Uplink, downlink, and bent-pipe comms
- Antennas
- SATCOM performance and orbit selection
- Signals and link budget
- SATCOM spectrum
- EMI and Jamming

PNT

- Principles of PNT
- GPS Constellation and ground architecture
- GPS architecture
- Other PNT systems