



STELLAR  
XPLOERS  
SPACE STEM PROGRAM

## National Space Design Competition Team Guide

*Your go-to document for getting a  
StellarXplorers team up and running*

Updated 7 September 2022



*A STEM program of the Air & Space Forces Association*

# StellarXplorers Team Checklist

Use this checklist to help your team get started with (and stay on track during) the StellarXplorers Space Design Competition. Additional details are explained in the document.

<b>Task</b>	<b>Additional Info</b>
<input type="checkbox"/> Find a Team Director (TD)	<i>TD is adult who will register/lead the team</i>
<input type="checkbox"/> Find Team Members	<i>2-6 members per team</i>
<input type="checkbox"/> Register the team on <a href="#">STLX Portal</a> *	<i>Must be done by Oct. 17, 2022</i>
<input type="checkbox"/> Download <i>Systems Took Kit (STK)</i> Software	<i>See STLX Portal for instructions</i>
<input type="checkbox"/> Obtain STK Educational License	<i>See STLX Portal for instructions</i>
<input type="checkbox"/> Download and read the StellarXplorers Rules Book	<a href="http://www.stellarxplorers.org/training">www.stellarxplorers.org/training</a>
<input type="checkbox"/> Practice using the training resources on the website	<a href="http://www.stellarxplorers.org/training">www.stellarxplorers.org/training</a>
<input type="checkbox"/> Obtain <i>Understanding Space</i> textbook	<i>Done by Team Director. See STLX Portal for instructions</i>
<input type="checkbox"/> Begin reading through <i>Understanding Space</i> textbook	

***We encourage teams to continue practicing between each of the online rounds below:***

<input type="checkbox"/> Participate in Practice Round 1 (PR1)	<i>October 12-17, 2022</i>
<input type="checkbox"/> <b>Compete in Qualifying Round 1 (QR1) - SCORED</b>	<i>October 27-30, 2022</i>
<input type="checkbox"/> Participate in Practice Round 2 (PR2)	<i>November 17-20, 2022</i>
<input type="checkbox"/> <b>Compete in Qualifying Round 2 (QR2) - SCORED</b>	<i>December 7-11, 2022</i>
<input type="checkbox"/> Participate in Practice Round 3 (PR3)	<i>January 12-15, 2023</i>
<input type="checkbox"/> <b>Compete in Qualifying Round 3 (QR3) - SCORED</b>	<i>January 26-29, 2023</i>

***Must advance to each of the rounds below to compete:***

<input type="checkbox"/> <b>Compete in Semifinal Round - SCORED</b>	<i>February 16-19, 2023</i>
<input type="checkbox"/> <b>Travel to and participate in National Finals Competition - SCORED</b>	<i>April 20-22, 2023 (in Houston, TX)</i>

***Start the process over!***

<input type="checkbox"/> Register for the next year of competition!	<i>Registration opens May 4<sup>th</sup></i>
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***\*Must add competitors by October 26, 2022 | \* Must pay registration fees by November 15, 2022***

## Overview

Working in partnership with leaders in the U.S. space industry, space-focused academia and government entities, the Air & Space Forces Association (AFA) developed StellarXplorers to inspire students to pursue science, technology, engineering, and mathematics (STEM) education and careers through an exciting space-focused competition.

Through StellarXplorers, we are cultivating the leaders in STEM with strong moral character, leading the way to space and beyond. The program gives members insight into the space industry and cultivates relationships between students and professionals.

Team membership in StellarXplorers is not restricted on the basis of race, color, religion, ethnicity, national origin, physical or mental disability, sexual orientation, veteran status, experience, gender identity, gender expression, or sex. Any student at a participating school willing and eager to participate is qualified for membership.

## General Guidance

The organizations that are most successful are those that adopt StellarXplorers as a key activity and give it consistent focus throughout the year. Consider these tips:

- **Appoint someone to lead your StellarXplorers efforts.** This will lead to improved continuity, communication, and consistency.
- **Make StellarXplorers a regular topic in your communications.**
  - May through early October – Competition registration and training. Focus on recruiting teams and new participants.
  - October through February – Competition season. Support your local teams.
  - April - National Finals Competition hosted in Houston, TX.
- **Tell your StellarXplorers story.** Use your StellarXplorers involvement with local schools and youth organizations to tell your community how you are inspiring students to get more involved in STEM studies! Reach out to media or inform your congressional representatives about StellarXplorers' success. You can also submit your stories directly to StellarXplorers for a chance to be featured in *The StellarXpress* monthly newsletter.
- **Ask for help.** AFA's StellarXplorers Program Office is happy to help. Contact staff at [info@stellarxplorers.org](mailto:info@stellarxplorers.org).

## Finding a Team Director

Before any students are permitted to compete, an adult must register as a Team Director. Team directors are not required to have prior experience with the competition, nor do they need to have experience with System Tool Kit (STK) or orbital mechanics. The competition focuses on the problem-solving side of space system design and less on advanced physics or equations. Team directors may work with and support their teams during practice rounds, but they may not offer any assistance during the qualifying rounds.

A team director may register up to five teams, but there may only be one team director for each team (no assistant/co-directors – this is non-negotiable). The team directors retain the authority and responsibility to control their teams, including access of other people. The Team Director is the ultimate authority concerning who works with their team. A team director may assist other teams only as a registered Mentor or Team Assistant.

To be a Team Director, an individual must meet the following requirements:

- Adult over 18 years of age on or before the registration deadline
- Vetted and approved to work with minors by a Verification Official\*
- Registered as the Team Director for five teams or fewer
- Not a competitor or high school-level student
- Not a member of the StellarXplorers Program Office
- Agrees to abide by the Standards of Conduct outlined in the STLX Rules Book

*\*Verification Officials are typically school officials or the individual's supervisor who can confirm the team director is approved to work with minors and participate on behalf of the school or organization.*

## Finding Competitors (team members)

It only takes 2 to 6 competitors to form a team. Here are a few ideas to spread the word about StellarXplorers:

- Place posters on bulletin boards or in classrooms (with permission).
- Set up a table and share flyers with students.
- Make announcements during the school's morning and/or afternoon announcements.
- Hold an afterschool meeting to talk about the program.
- Submit a brief write up to the school newspaper/newsletter.
- Discuss the opportunity with other students in your classes.
- Host a fundraiser to spread awareness and raise money for the registration fee.

## Finding Technical Mentors / Team Assistants

*Note: All mentors and team assistants are required to registration with StellarXplorers and complete a background before being approved to work with teams (paid for by StellarXplorers). Team directors and mentors/assistants can find each other through the STLX portal.*

**Technical mentors** are optional (but recommended) adult team technical advisors/subject matter experts. Keep in mind that these individuals are volunteers, and their commitment levels may vary. Responsibilities may include:

- Developing lesson plans and teaching space-related skills and ethics
- Expanding on the topics found in practice and training materials
- Speaking about career paths and real-world space design applications

There is no limit to the number of technical mentors assisting a team, or to the number of teams a technical mentor may assist. Mentors may also assist virtually from a remote location. They are not required to meet with the team in-person.

If you are struggling to connect with a mentor through the STLX mentor database, we recommend contacting local universities with aerospace departments, local offices of STLX sponsoring companies, or other companies that with a space-driven mission. There may be individuals at these organizations interested in becoming mentors.

**Team assistants** are optional adult team members who provide non-technical support and encouragement to the team. Team assistant responsibilities vary by team, but sample responsibilities include:

- Coordinating and scheduling meeting times/locations
- Preparing competition computers with necessary software
- Providing drinks and snacks for meetings / competitions
- Sending communications to teams

There is no limit to the number of team assistants that may help a team.

## Competition Preparation

### Practice Schedule

It's up to the team how much time they dedicate to preparing for the National Space Design Competition. Setting a regular practice schedule is recommended, but not required. Some teams meet after school once or twice a week, others may meet on the weekends, and some only meet once or twice a month. It all depends on team member and facility availability. Regardless of in-person meetings, there are plenty of ways to prepare individually or through virtual meetings.

### Practice Scenarios

Prior to each of the three qualification rounds, practice scenarios are made available to all teams. It is recommended that teams utilize these practice rounds to strengthen their skills and walk through the steps expected of them in the scored round. The submission process of deliverables is the same between each respective practice and qualification round.

For those wanting additional practice, there are several sample scenarios on the [Training Materials](#) page of the StellarXplorers website. Prior to Practice Round 1, team directors must [submit Host ID information](#) to the STLX Program Staff.

### Study Guides (for Academic Quizzes)

In addition to the competition scenarios, teams are required to complete one academic quiz per round. Teams are strongly encouraged to use the study guides on the [Training Materials](#) page of the website to prepare for these quizzes. The quizzes are based on information found in the *Understanding Space* textbook, which all team directors should request access to when they register.