How to Compete in Science Olympiad:

A guide for Rhode Island schools

Brown Science Olympiad

Providence, RI | Email: scioly@brown.edu | Website: https://www.brownscioly.com/

Director	Assistant Director	Outreach Chair	Urban Initiative Coach
Nick Sawicki	Luke Randall	Alicia Jin	Ashley Kim

Table of Contents

Table of Contents 1

What is Science Olympiad? 2

Rhode Island Science Olympiad 3

Brown Science Olympiad 4

Purpose of this Guide 4

Ideas for Recruiting Students 4

- Flyers 5
- Welcome Packet 6
- Social Media 6

Ideas for Club Structure 7

- Student Leadership 7
- Other Suggestions for Team Organization 8

Diversity, Equity, and Inclusion (DEI) 8

Resources 9

Contact Us 11

What is Science Olympiad?

Science Olympiad (also commonly written as SciOly or SciO, and SO in reference to organizational bodies) is a national science competition for middle (Division B) and high school (Division C) students consisting of 23 events that span all disciplines of science (a full table of events is shown here):

Biology	Earth Science	Physics	Chemistry	Technology	Inquiry
Division B					
Anatomy & Physiology	Dynamic Planet	Crave the Wave	Can't Judge a Powder	Bridge	Codebusters
Bio-Process Lab	Meteorology	Sounds of Music	Crime Busters	Flight	Experimental Design
Disease Detectives	Road Scholar	Storm the Castle		Roller Coaster	Fast Facts
Forestry	Rocks and Minerals			Wheeled Vehicle	Write It Do It
Green Generation	Solar System				
Division C					
Anatomy & Physiology	Astronomy	It's About Time	Chemistry Lab	Bridge	Codebusters
Cell Biology	Dynamic Planet	Trajectory	Environmental Chemistry	Detector Building	Experimental Design
Disease Detectives	Remote Sensing	WiFi Lab	Forensics	Flight	Fermi Questions
Forestry	Rocks and Minerals			Scrambler	Write It Do It
Green Generation					

In teams of 15, students divide and conquer all 23 events and compete against other schools at tournaments throughout the year with the ultimate goal of advancing to the national tournament hosted at a different university in early May each year. A team's score is the sum of all the individual student placements in each of the 23 different events. The smaller a team's score, the higher the team is placed. The events cycle out yearly, so for the official rules for the current year you will need the rules manual provided by National SO here: https://www.soinc.org/rules-2023.

Each state is broken into approximately 6 different regions, and each region hosts a local regional tournament for schools within the respective boundary. Top performing teams in each region (typically the top 6 teams) will advance to the state tournament. The top placing team at the state tournament then advances to the national tournament and competes against other state champions for the national title each year. In order to prepare for the regional, state, and national tournaments, teams will often compete in "invitationals" which don't count towards a team's score, but serve as a way for students to practice in a competition setting.

Sample Team Season: *Nicholas Brown High School*

1. January 28, 2023 – Harvard University Invitational
2. February 11, 2023 – Brown University Invitational
3. March 18, 2023 – South RI Regional Tournament *(NOTE: RI does not have regional tournaments due to the size of the state)*
4. April 1, 2023 – RI State Tournament
5. May 6, 2023 – National Tournament

Brochure from National SO:
http://www.soinc.org/sites/default/files/uploaded_files/SO_2017_Brochure_FINAL.pdf

Rhode Island Science Olympiad

In Rhode Island, there are approximately 18 teams that compete each year at the state tournament hosted at Rhode Island College. Because of its small size, Rhode Island is not split into different regions – thus teams advance directly to the State tournament where the first place team each year then advances to the national tournament.

The state tournament is hosted at Rhode Island College in early April each year. Registration information can be found at the RI State Science Olympiad website: https://w3.ric.edu/faculty/organic/ScienceOlympiad/.

Brown Science Olympiad

Each year, Brown University hosts an invitational for high school teams (Division C only) in early February, in-person on Brown's campus (this year's tournament will be on February 11th, 2023). Around 40 teams attend from the New England and tri-state regions. Rhode Island High Schools receive priority over teams from other states and automatically receive a spot at our invitational should they choose to attend.

Additional information about our tournament such as registration instructions, updates, and a link to join our email list, can be found on our website here: https://www.brownscioly.com.

Purpose of this Guide

The objective of this guide is two-fold: to provide additional support/advice to already existing SciOly teams, and to help schools without SciOly teams create one. As former SciOly competitors ourselves, we can attest to the fact that SciOly cultivated our passion for science from a very young age. So our mission is to ensure that as many students as possible have the opportunity to explore all that science has to offer through participating in Science Olympiad.

Please share this guide with your club officers! We believe that the teacher-student relationship in SciOly is essential to your team's success and full transparency whenever possible is a must. Everything in this guide is meant for advice, primarily from the perspective of former Science Olympiad competitors and current tournament organizers. Please experiment with the resources we provide to find the best configuration that works for your team.

Ideas for Recruiting Students

Recruiting students is challenging, and keeping them is harder. Science Olympiad is a new program for many students that, while extremely rewarding, requires a great deal of extra effort out of them. This is why student interest in competitive science should be a central focus of selecting team members. Here is a quote to summarize this point from Eleanor Sheposh, the founder of Regional Director of Michigan SO:

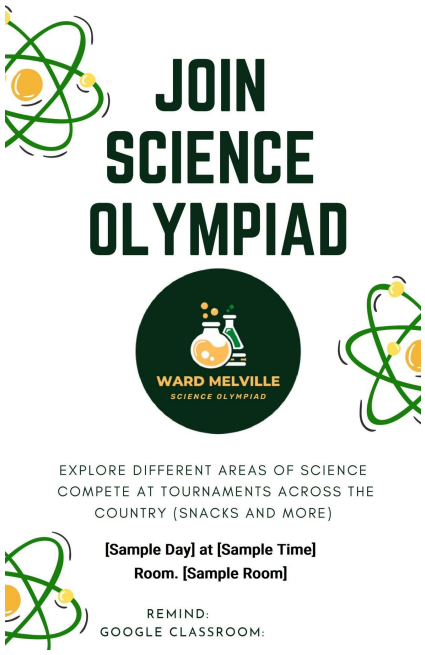
> *Remember: gather team members who are eager, glad to be involved. Team members should not be selected merely from the ranks of the talented and gifted. Interest should be primary in selecting a team member. A team number has a maximum of 15 students. Let the kids set the pace. If your team is small, it is still a team. A team of five [dedicated members] can easily do at least 10 events. LET*

THE STUDENTS SET THE PACE. Your team may not win a championship, but your individual team members can win medals and have lots of fun.

Here are some resources we have compiled for recruiting students:

Flyers

- Flyers are a great way to get students to come to your first meeting of the season and pique interest before the season begins. One option for these posters is hanging them around the hallways and stairwells of your school. Another option is handing stacks of them to other STEM colleagues and asking them to distribute them to their students.
- Possible items to include on a poster:
    - Club name and logo
    - Introduction to your SciOly team and/or the SciOly organization
    - When and where your team meetings will take place
    - Any links to team resources (QR codes work great here), such as: Remind, Google Classroom, Mailing List, Discord, Slack



Sample Flier

(Courtesy of WMSO, Long Island, NY)

Welcome Packet

- A welcome packet can be given out at the beginning of the season, typically at the first meeting you host (or a PDF can be emailed out to your mailing list). This information helps those unfamiliar with the SciOly program as well as provides new resources and advice to returning students.
- Sample table of contents for a welcome packet:
    - Letter from your Captains
    - What is Science Olympiad?
    - How to Succeed at [Sample School Name] SciOly
        - About the Coaches and Officers
        - Tryouts (How Teams are Made)
        - Weak Events & Past Performance Analysis
    - Resources
        - The Rules Manual and Common Online Resources
        - Tech Lab and Build Information
        - Lab Event and Lab Work Information
    - Testimonials & Advice from Alumni
- The welcome packet can be much smaller than the list provided, but should at least provide some general information about the organization and club structure. It is important for student leaders to have a significant role in creating this packet since they know their peers the best and what information is most helpful to include.

Social Media

- Many SciOly teams across the country have either Instagram or Facebook pages (TikTok is now rising in popularity for this purpose as well) to showcase their results and bolster team spirit. Here are a few examples of posts teams in the past have created:
    - Meetings - Provide the date, time, and location of your weekly team meetings.
    - Event Showcases - Posting the top achieving students in their respective events brings pride to the team and gives other students inspiration to work harder on their events.
    - Officer Spotlights - Highlighting the club officers can help to introduce students to their team leadership and thus feel more comfortable working with them.
    - Tournaments - Competition day is one of the most stressful days for SciOly students so taking a small social media break can boost morale and help the students to have fun competing.

- Social media is something that can mostly be controlled by student leadership, though it can also help with recruiting in the beginning of the season. Students can share posts about meetings to their Story which helps spread information about how to get involved with Science Olympiad.

Ideas for Club Structure

Student Leadership

An essential part of Science Olympiad, and one of the most rewarding parts of the program for students, is having team members serve as club officers. It is highly recommended for coaches (the faculty in charge of the team) to give many of their less administrative tasks to the students. This benefits the teacher-student relationship from both sides: the student is able to learn leadership and responsibility skills and the teacher has less work to do for the team. It is generally helpful to have interviews or applications to choose club officers, though it is also fine to allow the most passionate students to choose their own positions (or the coach can appoint those they see fit to be an officer). Here is an example list of some officer positions along with some sample tasks for them to do (though feel free to mix and match these positions for your team as well as experiment with having a multiple students fill one position):

- Captain/President - The team captain (or co-captains) is the highest ranking officer in your student leadership team and should have the final say on all subjects related to the team (with the permission of the coach). They are typically responsible for hosting meetings, organizing tryouts, selecting team members and tournaments to go to, checking on team members for individual progress, and delegating work out to other team members.
- Secretary - Creates weekly meeting recaps of meetings, sends meeting notes out to all club members, makes event schedules for each tournament, keeps track of attendance at meetings and practices, and collects forms from club members.
- Treasurer - Collects money from club members, organizes team member purchases for reimbursement, signs necessary documents for each tournament or field trip, and seeks opportunities for fundraisers.
- Build Officer - Is well informed on the exact specifications and rules for build events, routinely checks for updates on rules clarifications prior to each tournament, checks in with team members to make sure they have a build that fits the given ruleset, ensures that all equipment is brought to tournaments.
- Logistics Coordinator - Makes trip itineraries, plans hotels and dining/catering, creates rooming forms, plans tournament activities with coaches, revises field trip forms.
- Information Technologist - Organizes resources on the team Google Drive, maintains online resources (such as test exchanges), emails event supervisors for rules clarifications, makes team posters for advertising.

Other Suggestions for Team Organization

- Having a central Google Drive or folder is great for organizing tests, study materials, and other online resources. Additionally the student leadership can use this drive to put in their administrative documents for a shared area to work on the team. Uploading the official rules manuel is helpful here too (which can be found at https://www.soinc.org/rules-2023)
- Schools that have more than 15 interested students in competing may want to consider holding tryouts. Usually tryouts happen in early October after the first few general body meetings and students have had a bit of time to become familiar with the events. They are also typically conducted in shorter time blocks rather than the 50 minutes for a real, tournament event. Materials required for the tryouts should be announced early on to students such that they have ample time to create their note sheets or binders. Additionally some tournaments, mostly invitationals and regionals, will allow schools to send multiple teams to compete. Thus, you can have the students that did not progress through tryouts still compete in SciOly.
- It is recommended to have at least one after school session per week be dedicated to SciOly practice, whether that be taking tests, writing note sheets, or just team bonding. Some teams will even host optional practice sessions during the week where students can come into a space reserved for SciOly practice and work on their events (some teams even hold practices on weekends). Additionally, having snacks available or group dinners in these spaces is recommended to facilitate team bonding; “hanging out and practicing SciOly” is one of many students favorite parts of the program.

Diversity, Equity, and Inclusion (DEI)

A central core value of Science Olympiad is to increase opportunity and diversity in science. In order for SciOly to fulfill that mission, we commit to embracing, valuing, and respecting a variety of social and cultural backgrounds including, but not limited to race, class, ethnicity, sexual orientation, gender identity, mental/physical ability, religion, and age.

With a recent significant increase of STEM occupations in the US, preparation for a strong workforce has become crucial. Alongside a classroom-based curriculum of science and mathematics courses, out-of-school STEM activities have demonstrated to be crucial for continued participation and degree attainment in the science industry. Establishment of K-12 STEM programs is especially important for women and students from racial minorities, who are historically less likely to report positive interactions within the classroom.

Participation in STEM extracurricular activities by underrepresented groups has shown to reduce racial, gender, and socioeconomic gaps that arise in postsecondary educational settings (Smith et al., 2019). Science Olympiad aims to provide exposure to new topics and skills that allow for additional study and exploration of topics within safe environments. Further exposure to postsecondary education environments (such as invitational tournaments at colleges with diverse

student-led teams) provide opportunities for students to see institutions as more STEM friendly as well.

An additional aspect of DEI is the representation of rural and underfunded teams. As better resourced teams have wider access to practice materials and more financial support to visit various competitions, rural and underfunded teams often have difficulty competing on "level ground." Through implementation and utilization of resources available online and through the Urban Initiative program, Science Olympiad works toward promoting greater equitable access and experiences. Here is an article about how National SO is seeking to reduce this gap: https://www.soinc.org/programs/urban-schools-initiative.

It is highly recommended that coaches work with DEI coordinators at their schools to implement strategies in order to promote inclusivity for all students in science instruction. Diversity, equity, and inclusion are regarded as core components of Science Olympiad. Through fostering diversity, equity, and inclusion in the establishment and implementation of a Science Olympiad program, programs may enhance wider participation and produce more positive affective experiences for students. For example, one way in which this can be accomplished is by dedicating a team meeting to this topic so students understand the importance of DEI.

For additional reading materials:

- A report from Montana State University regarding DEI in youth STEM outreach
- A guide for best practices for diversity and inclusion in STEM education, distributed by the White House
- Further research conducted on the influence of early STEM programs on postsecondary education

Resources

- Messaging Platform
    - Slack (https://slack.com/) and Discord (https://discord.com/) essentially function the same, with Slack being more professional and Discord being more popular among high school students. They are both messaging systems that allow for the separation of chats into many channels, which typically helps with organizing communication lines both between team members and between teacher and students. Some examples of channel organization would be separating them by event, student leadership, and keeping up with alumni.
    - Remind (https://www.remind.com/) is primarily for disseminating information from the coaches and team captains to the rest of the team. Remind can be used for last minute team updates or important announcements on the day of a given tournament, in addition to general use team messaging.
    - Team Group Chats

        - Typically these do not work out because not everyone has the same operating system (iPhones and Androids don't mix well, especially with high school students), which makes communication difficult.
        - Other options for having a team group chat while avoiding this problem include GroupMe (https://groupme.com/en-US/), WhatsApp (https://www.whatsapp.com/), and WeChat (https://www.wechat.com/), to name a few.
- Soinc.org (https://www.soinc.org/) is the website for the National Science Olympiad organization and is where you can find the definitive answers for rulings and events.
- Scioly.org (https://scioly.org/), also known as the Science Olympiad Student Center, is a widely used website that gives unlimited access to a wealth of information on Science Olympiad and competition. The three most used components of this website are the following:
    - Forums (https://scioly.org/forums/) - Here students can interact with other students, coaches, and alumni of Science Olympiad and ask questions about almost any SciOly topic.
    - Wiki (https://scioly.org/wiki/index.php/Main_Page) - This is a free encyclopedia of knowledge for almost every Science Olympiad event. Be aware, however, the articles vary significantly in their degree of helpfulness: for example, the page for Codebusters is comprehensive and is essentially everything students need to know for the event, while Anatomy & Physiology only has some broader notes and further information is needed to succeed in the event.
    - Test Databank (https://scioly.org/tests/) - The Scioly.org test databank is one of the broadest and most accessible resources for exams that require no test trading to acquire.
- Test Exchanges are a very "sensitive" topic in SciOly, but *extremely* important to the success of your team. Most function in a similar way: your team members or alumni write practice exams for each SciOly event and then submit them to a central database, and in return you get access to every practice exam that the other teams have submitted. Tests are one of the best, if not *the best*, way for students to study as they provide immediate feedback on their events and simulate what exams on the day of competition will be like. To succeed in Science Olympiad, regular test taking and reevaluation is *critical*. Though there is an important caveat, which is the fact that many authors of tests and teams want (and will go to great lengths) to protect their tests from being shared without their explicit permission. This is because tests are like currency in SciOly; to receive them you must give them. This is why test trading is a sensitive topic, and must be treated similarly to copyrighted material. Many test exchanges will provide disclaimers that state what their tests may be used for, such as this one provided by Scioly.org (https://scioly.org/wiki/index.php/2022_Test_Exchange):

    > *The following are full test sets that have been published openly by the tournaments themselves. As this is a noble practice we wish to encourage, please use these resources only for training. While we would ask prospective event supervisors to refrain from copying any of the tests on*

this exchange for use in a competitive setting, this request is especially important for these full sets.

Additionally, many students have access to these tests, so while they can be used for team evaluation or tryouts at the beginning of the season, team leaders should refrain from using test exchange material for these purposes. All that being said, here is information on some of the largest and well known test exchanges on Scioly.org:

- Captains Tryouts (https://scioly.org/wiki/index.php/Captains_Tryouts)
- Captains' Summer Exchange (https://scioly.org/wiki/index.php/Captains%27_Summer_Exchange)
- Scioly Summer Study Session (https://scioly.org/wiki/index.php/Scioly_Summer_Study_Session)

- Additional resources on how to start/maintain a new team (mostly from the perspective of school administrators and science educators):
  - Starting A Science Olympiad Team (Scioly.org)
  - Start a Team (Soinc.org)
  - Organizing a Team (Soinc.org)
  - Science Olympiad: How To Get Started & How To Keep Going (Michigan SO)

Contact Us

Thank you for taking the time to read this information packet. As always, we are committed to helping you to the best of our ability. To help us help you, please fill out this Google Form with your contact information and any feedback you may have for Brown Science Olympiad. We look forward to hearing from you and (hopefully) seeing you at our invitational!