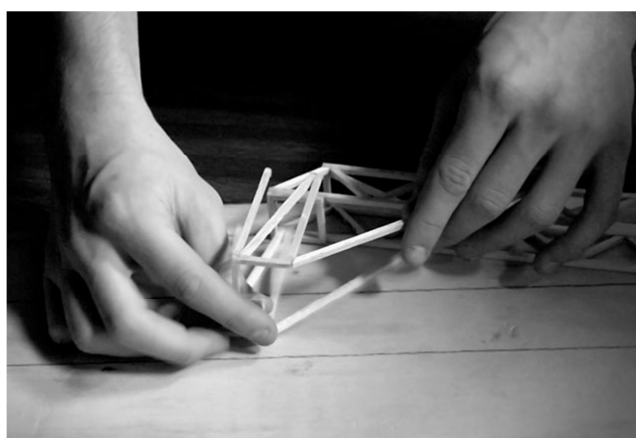




Coaches Handbook 2011/2012

Welcome to Tennessee Science Olympiad



This handbook is intended as a supplement to the annual National Science Olympiad Rules Manuals and to the National and Tennessee Science Olympiad websites.

Tennessee Science Olympiad

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Contents

Contact Information	1
Background: Science Olympiad and Tennessee Science Olympiad	3
Important Dates and Deadlines	4
Divisions	4
Teams	4
Science Olympiad Membership	5
Organizing a Team	5
Events	6
Tournaments	6
Coaches Workshops	7
Event Preparation and Training	7
Tournament Preparation and Planning	9
Appendix	
Tournament Rules, Procedures, and Policies	11
2012 Events	13

Background: Science Olympiad and Tennessee Science Olympiad

The Science Olympiad is an international nonprofit organization devoted to improving the quality of science education, increasing student interest in science and providing recognition for outstanding achievement in science education by both students and teachers. **Teams of 15 students develop their teamwork and problem solving throughout the year in preparation for each of the events.**

Science Olympiad is an ideal way to increase student interest in science and engineering in a school. **The knowledge and skills that students develop through competing in Science Olympiad improves their overall academic performance and helps prepare them for college.** Participation in Science Olympiad is the kind of extra-curricular activity that is prized by admissions committees for prestigious summer programs, such as the Governor's Schools, and by college and scholarship evaluation committees.

Middle (Division B) and high school (Division C) teams initially compete in one-day regional tournaments that are held at several locations throughout Tennessee. The top 18 teams advance to the state tournament held at the University of Tennessee, Knoxville, in the spring. The winning team in each division then competes in the National Tournament generally scheduled in late May.

There are multiple events in earth science, biology, chemistry, physics, engineering, computers and technology that follow the format of popular board games, TV shows, and athletic games. **Events in the Science Olympiad have been designed to recognize the wide variety of skills that students possess.** While some events require knowledge of scientific facts and concepts, others rely on science processes, skills or applications.

It's all about teamwork: Planning and preparing for Science Olympiad competitions requires teamwork and cooperation.

It's all about learning and having fun!

Important Dates and Deadlines

October	Coaches Workshop
December 15:	Team Registration with Tennessee Science Olympiad
February- March:	Regional Tournaments
April:	State Tournament
May:	National Tournament

Divisions

There are two Science Olympiad competition Divisions: Division B – grades 6-9; and Division C – grades 9-12. (Division A organizes events for students in grades 1-5 but do not involve regional, state or national competitions).

Teams

A competition team consists of a maximum of 15 members. Teams may compete with fewer members but will of course be disadvantaged in the overall team competition. Although a team of 15 competes in tournaments, a school's Science Olympiad Team may be (should be!) larger. Team members who are not a part of the competition team are often "competitors-in-training" who work with others team members in preparation and planning, and may travel with the team as alternates in the event a primary is unable to compete. Schools with large membership frequently field multiple teams for intra-school, invitational, and regional competitions. A team may enter no more than one set of competitors in each event.

Students on the team must be from the membership school. A school is considered to be a separate school if it has a separate administrator. Recruitment of students attending other schools is not permitted.

Home school students may form teams whose members live within the boundaries of two contiguous geographic counties in the state.

A maximum of five 9th grade students on a Division B team and seven 12th grade students on a Division C team is permitted.

Science Olympiad Membership

Science Olympiad requires that all teams (up to 15 members) competing in any Science Olympiad tournament (Invitational, Regional, State or National) must be a member. The membership fee is \$200 per year. **Each team from a school must file and pay a separate registration fee and each team must have its own coach.** The University of Tennessee, Knoxville will continue to offer financial support for new teams. If you are a new team or have not competed in the last 3 years you are eligible to receive the reduced membership fee of \$100. Registration information and forms are available on the Tennessee Science Olympiad website: <http://tnscioly.utk.edu/>. The deadline for membership registration for regional tournaments is mid-December.

Organizing a Team

A Science Olympiad Team is typically organized as an extracurricular school club with the support of the school's administration. A highly successful team also has the volunteer and financial support of parents, community organizations, and local professionals, organizations and businesses. Team coaches should look to developing this support, coaching, and fund raising network.

A school's Science Olympiad organization consists of the involved students of course, the TEAM proper, a coach who is a teacher at the sponsoring school, and assistant event coaches and support volunteers from the school's faculty, parents, and the community.

Although a competition team consists of 15 students, there is of course no limit to the size of a school's Science Olympiad membership. However, in planning for tournament participation each competition team must 1. Have the grade level composition specified by the SO rules (see page 4); 2. Register with Tennessee Science Olympiad; and 3. have a designated coach.

A good way to begin is by hosting an interest meeting of students, teachers, parents, and administrators.

Events

A Science Olympiad tournament consists of 23 events in five event categories:

- Life, Personal, and Social Sciences
- Earth and Space Science
- Physical Science and Chemistry
- Technology and Engineering
- Inquiry and Nature of Science

Events vary from year to year, with each year's tournament schedule consisting of a mix of a previous year's events and new and rotating events. The specific focus and rules for recurring and rotating events change each year.

Events in the Science Olympiad are designed to recognize the wide variety of skills that students possess. Some events focus primarily on knowledge of scientific facts and concepts and others emphasize science processes, skills and applications.

Science Olympiad events align with national science education content and process objectives (see: http://soinc.org/align_natl_stand). The goal is to reinforce and extend classroom learning while giving students' curiosity the opportunity to flourish.

Tournaments may offer one or more trial events in addition to the 23 competition events scheduled in a given year. Trial events do not count toward team points in tournaments.

Event descriptions and rules for each tournament season are found in the National Science Olympiad Division B and Division C Rules Manuals. Manuals are provided with membership; additional copies may be purchased from the National Science Olympiad.

Tournaments

Teams compete in one-day regional tournaments that are held in February or March at several locations throughout Tennessee. Information about locations, dates, and directors of regional tournaments can be found on the Tennessee Science Olympiad website: <http://tnscioly.utk.edu/>. The top 18 teams advance to the state tournament held at the University of Tennessee, Knoxville, in the spring. Information about the State Tournament is also available on the Tennessee

Science Olympiad website. The top team from each division in the state tournament competes in the national tournament held in late May.

In addition to regional tournaments, some schools in Tennessee and adjoining states host invitational or open tournaments. These tournaments offer teams an opportunity to hone their skills and increase their familiarity with competition tournament events. Schools with large Science Olympiad organizations may wish to hold intra-school events as a part of their tournament preparation and to help in planning competition team composition.

Regional and state tournaments are staffed by hundreds of volunteers from colleges, business and industry, and the community. These volunteers give of their time to plan, set up, and supervise tournament events. Event supervisors and their assistants are fair-minded people interested in student learning and the success of all teams.

Coaches Workshops

Coaches' workshops are opportunities for current and prospective coaches to become familiar with Science Olympiad events, as preparation for working with their teams. Sessions are led by experienced coaches and tournament event supervisors who are familiar with event rules and content.

The Tennessee Science Olympiad hosts one or more workshops each year, usually in the Fall in preparation for the upcoming tournament year. Members of Tennessee Science Olympiad will be notified of future workshops, and information will be posted on the TSO website. Useful resources from past workshops are also available on the website.

The National Science Olympiad hosts a Science Olympiad Summer Institute in July. Information about this training resource is available on the national SO website.

Event Preparation and Training

After registering with Tennessee Science Olympiad you will receive a copy of the Rules Manual for the year's competition and information about tournament registration and dates. The manual has complete event descriptions, device specifications where appropriate, and performance and judging criteria. As your

team trains and prepares, coaches and/or team members should periodically consult the National Science Olympiad website for rules updates and clarifications.

Each team member should prepare for at least five or six events. A team of 15 students competes in 23 events, with as many as eight events taking place concurrently during the six competition periods. Most events involve up to two competitors from each team, and a few permit up to three competitors. A very few events such as Division B Pentathlon require four competitors. Team members will need to prepare for multiple events!

Matching team members with events is one of the coach's most challenging tasks. A useful starting point is to have each student in your Science Olympiad organization select five or six events they are interested in. This will likely lead to some events oversubscribed and some orphaned, but can also help the coach identify "interest sets" for each student. For example, some students may be drawn exclusively to engineering/building events while others are interested in biological science events. Using that student interest information and the teacher-coach's understanding of her/his students' skills sets, the coach can assemble training teams for each event. It is important to emphasize to your students that SO is a team competition and that everyone will be training and competing in some events that are not necessarily his/her favorite.

For maximum learning benefit of team members and team success, the team leader/coach will need to recruit a group of assistant coaches to supervise preparation for the specific events. The team leader/coach should take maximum advantage of the expertise of other teachers in the school, faculty at local colleges and universities, professionals from business, industry, and the public sector, and parents. However, it is important for volunteer coaches to clearly understand that adults doing the actual physical work involved in building events (vehicles, bridges, etc.) is forbidden by the rules, and contrary to the spirit of Science Olympiad and good teaching practice.

Team meetings/practice and preparation sessions range from once a month during the early part of the school year to weekly and even daily as competitions draw near.

Preparation Tips for Students and Coaches

- **Know the event rules and parameters!** Periodically check the National and Tennessee Science Olympiad websites for possible rules clarifications.
- **Work as a team!** Develop an understanding of each team member's strengths and weaknesses. Trust your team members.
- **Train for multiple events.**
- **Have fun!**
- Know the format of the event (stations, tasks, problems, etc.).
- Develop a training portfolio/binder for each event including copies of the event rules, training materials, and training notes.
- Practice for the competition using ALL of your resources.
- Practice with sample questions and use your resources to answer them.
- Remember that the events are timed and learn to use time effectively.
- Some events permit specified print resources or team assembled resource binders for use during the event. Modify the information as you use it to make it more efficient. As training and practice progresses use a timer when attempting to locate information and answer questions. Learn as much of the information as possible and only depend upon a few key items from resources allowed to be taken into the event.
- Make sure you have assembled all the supplies and safety equipment required for each laboratory or building event as specified in the rules.
- For building events test and evaluate your designs, and modify or tweak your design often.
- As tournament times draw near, practice under tournament conditions including time limits for task or event completion.

Tournament Planning and Scheduling

Regional and state competition schedules and maps of specific event locations will be available on the Tennessee Science Olympiad website several weeks before the date of the competitions.

With the schedule and event location information, the coach will need to identify the fifteen team members and alternates and the set of competitors for each event. It is important to not overtax any individual competitor with too many events, and to take transit time between back-to-back events into consideration

when making these competition assignments (arriving late to an event will usually result in disqualification).

As judges of the events, supervisors are expected to be familiar with the event rules and parameters. Occasionally there may be a misinterpretation or outright incorrect interpretation of the event rules by a supervisor. In the event such an occasion arise, have your students prepared to point out the misinterpretation or error to the event supervisor, using a copy of the rules; and should the supervisor insist in the correctness of her/his interpretation, have your students prepared to graciously accept that judgment. Finally, encourage your students to thank the event supervisor and assistants, whether there were problems with the event or not, and regardless of the team performance.

Planning and Scheduling Tips

- **Know the event rules and parameters!**
- Schedule students into their "strong" events to the extent possible.
- Schedule event team members with complementary skill sets.
- Note the times and places of events so students will be able to reasonably transit from back-to-back events.
- Schedule "back-up" team members (not alternates) who have trained in the event to be present in case an event was late in starting or ending and an originally scheduled team member(s) can't make it.
- Certain events, such as building events, do not require the person building the entry to be there. The entry is considered a team effort so any official team member (not an alternate) can cover the event. This can "free up" members for another event which requires their specific talent.
- Have a back-up plan! Inclement weather may require last minute changes to event times, locations, or conditions.
- Prepare for the unexpected such as illness or family emergencies that preclude a scheduled team member's participation. Alternates may be scheduled with tournament officials up to the day of the tournament.

GENERAL RULES, CODE OF ETHICS AND SPIRIT OF THE PROBLEM (rev. 8/16/2010)

Students, coaches, event supervisors, parents, and guests are expected to follow current Science Olympiad Rules. The goal of competition is to give one's best effort while displaying honesty, integrity, and sportsmanship, and not violate the spirit of the problem. All are expected to display courtesy and respect toward one another. Failure to show honesty or courtesy by a participant, coach, or guest of the team may result in penalty points being assessed or disqualification of the team from the event, the entire tournament or future tournaments. Our collective example will promote the spirit of cooperation among all participants. Therefore:

1. Teams may not interpret the rules so that they have an unfair advantage over the rules or another team.
2. Unless otherwise stated, it is generally understood that if notes, resources, calculators, actions, etc., are not excluded, then they are permitted unless they violate the spirit of the problem.
3. All non-permitted electronic devices must be turned off and if so directed, left in a designated spot.
4. Once teams have entered the event area to compete, they must not: leave until they are finished, return once they have left, communicate with outside resources, including people, places, etc. by any means (this effectively excludes the use of any computer, PDA, calculators, wireless devices, phones, etc. that have access to external communication or data retrieval during an event unless specifically permitted).
5. Safety is of the utmost importance. Event supervisors are obligated to prevent unsafe acts and devices. Safety decisions are not subject to appeal. Students should not risk being penalized for safety violations such as activating devices or removing goggles without supervisor permission. Contestants must not bring harmful items to a tournament. Teams may only bring items that are specified in the rules.
6. Coaches, teachers, parents, students, and other adults are responsible for ensuring that any applicable laws, regulations, and school policies are not broken.
7. One or more of the 15 current team members must have constructed all pre-built devices presented for judging. Any of the current team members may demonstrate or operate the device at the competition unless stated otherwise in the rules.
8. Any person designated by the coach can impound devices unless stated otherwise in the rules.
9. Depending upon the level of an infraction, at the supervisor's or tournament official's discretion, a student or team may be penalized, removed from the event at that point, or disqualified.

State and regional tournament directors must notify teams of any site-dependent rule or other rule modification at least 30 days prior to the tournament.

Science Olympiad Code of Ethics

Student participants are expected to compete in tournament events with honest effort to follow the rules and the spirit of the competition. Team members are expected to be the builders of all the devices used in the events. The goal of competition is to give one's best effort while displaying honesty, integrity, and sportsmanship. Students, coaches, parents, and guests are expected to display courtesy and respect toward Olympiad officials, other teams, and guests of the Olympiad. Failure to show honesty and/or courtesy by a participant, coach, or guest of the team may result in the disqualification of the team from that event, the entire tournament or future tournaments.

Student's Pledge

I pledge to put forth my best effort in the Science Olympiad tournament and to uphold the principles of honest competition. In my events, I will compete with integrity, respect, and sportsmanship towards my fellow competitors. I will display courtesy towards Event Supervisors and Tournament Personnel. My actions will exemplify the proud spirit of my school, team, and state.

Coach's Pledge

On behalf of the coaches and assistants at this tournament, I pledge to encourage honesty and respect for tournament personnel, our fellow coaches, and other team members. We want our efforts to bring honor to our community and school.

Parent's Pledge

On behalf of the parents and spectators I pledge to be an example for our children by:

- respecting the rules of Science Olympiad,
- encouraging excellence in preparation and investigation,
- supporting independence in design and production of all competition devices,
- and respecting the decisions of event supervisors and judges.

Our examples will promote the spirit of cooperation within and among all our participating teams.

Event Supervisor's Pledge

On behalf of my fellow supervisors and tournament personnel, I pledge to run my event with fairness and respect for the participants and their coaches. Our actions will reflect the principles of the Science Olympiad program and display the pride we feel as representatives of our colleges, universities, companies, states or organizations.

2012 Division B Events

Life, Personal & Social Science

- Anatomy (Respiratory, Digestive)
- Disease Detectives (Food Borne Illness)
- Water Quality
- Microbe Mission
- Forestry

Earth & Space Science

- Dynamic Planet (Earth's Fresh Waters)
- Reach for the Stars
- Meteorology (Climate)
- Road Scholar
- Rocks and Minerals

Physical Science & Chemistry

- Keep the Heat
- Crime Busters
- Optics
- Food Science
- Storm the Castle

Technology & Engineering

- Bottle Rocket
- Mission Possible
- Mousetrap Vehicle
- Towers

Inquiry & Nature of Science

- Awesome Aquifers
- Compute This
- Experimental Design
- Write It Do It

2012 Division C Events

Life, Personal & Social Science

- Anatomy and Physiology (Respiratory, Excretory, Digestive)
- Disease Detectives (Food Borne Illness)
- Water Quality
- Microbe Mission
- Forestry

Earth & Space Science

- Astronomy
- Dynamic Planet (Earth's Fresh Water)
- Remote Sensing (Human Impact on Earth)
- Rocks and Minerals

Physical Science & Chemistry

- Optics Lab
- Thermodynamics
- Sounds of Music
- Chem Lab
- Forensics
- Protein Modeling

Technology & Engineering

- Helicopters
- Robot Arm
- Gravity Vehicle
- Towers

Inquiry & Nature of Science

- Experimental Design
- Fermi Questions
- Technical Problem Solving
- Write It Do It