INFORMATION DOCUMENT

PENN SCIENCE OLYMPIAD INVITATIONAL 2021

Draft One - 12/15/2020

SOUP

CONTENTS

Letter from Our Executive Board

Dear Coaches,

We are so glad your team is attending the fifth annual Penn Science Olympiad Invitational!

We are hard at work to make sure that this year's tournament is the best and largest one yet. Enclosed you will find details regarding your team number, the tournament schedule and policies, and other important information. This year, we will have 100 teams competing from 15 unique states in our hybrid miniSO tournament.

We are super excited to host you here! Please feel free to reach out to us if you have any questions.

See you in February,
SOUP Executive Board

Team #	Team Name	State
1	Abington Heights High School	PA
2	Allentown Central Catholic High School	PA
3	Athens Area High School - A	PA
4	Athens Area High School - B	PA
5	Bayard Rustin High School - A	PA
6	Bayard Rustin High School - B	PA
7	Bridgewater Raritan Regional High School	NJ
8	Brighton High School	NY
9	Brooklyn Technical HS	NY
10	Canton High School	MI
11	Carmel High School - A	IN
12	Carmel High School - B	IN
13	Centennial HS - A	MD
14	Centennial HS - B	MD
15	Chaminade High school	NY
16	Chattahoochee High School - A	GA
17	Chattahoochee High School - B	GA
18	Cherry Hill East High School - A	NJ
19	Cherry Hill East High School - B	NJ
20	Columbia High School	NY
21	Conestoga High School - A	PA
22	Conestoga High School - B	PA
23	Cumberland Valley High School - A	PA
24	Cumberland Valley High School - B	PA
25	Cumberland Valley High School - C	PA
26	East Brunswick High School	NJ
27	Ed W. Clark High School	NV
28	Fairfax High School - A	VA
29	Fairfax High School - B	VA
30	Fayetteville-Manlius Senior High School	NY

Team #	Team Name	State
31	Harriton High School - A	PA
32	Harriton High School - B	PA
33	Hillsborough High School - A	NJ
34	Hillsborough High School - B	NJ
35	Hunter College High School - A	NY
36	Hunter College High School - B	NY
37	Iolani School	HI
38	John Jay High School	NY
39	John P. Stevens High School - A	NJ
40	John P. Stevens High School - B	NJ
41	JR Masterman School	PA
42	Kellenberg Memorial High School	NY
43	Lake Braddock High School	VA
44	Lexington High School	MA
45	Liberal Arts and Science Academy - A	TX
46	Liberal Arts and Science Academy - B	TX
47	Longmeadow High School	MA
48	Lower Merion High School - A	PA
49	Lower Merion High School - B	PA
50	Mason High School - A	OH
51	Mason High School - B	OH
52	Mason High School - C	OH
53	Merrimack High School	NH
54	Middlesex County Academy for Science, Mathematics & Engineering Technologies	NJ
55	Mira Loma High School	CA
56	Montgomery High School - A	NJ
57	Montgomery High School - B	NJ
58	North Penn High School - A	PA
59	North Penn High School - B	PA

Team #	Team Name	State
61	North Pocono High School - B	PA
62	Parkland High School - A	PA
63	Parkland High School - B	PA
64	Philadelphia High School for Girls	PA
65	Plattsburgh High School	NY
66	Princeton High School	NJ
67	Reservoir HS - A	MD
68	Reservoir HS - B	MD
69	River Hill HS	MD
70	Saint Anthony's High School	NY
71	Saline High School - A	MI
72	Saline High School - B	MI
73	Shady Side Academy - A	PA
74	Shady Side Academy - B	PA
75	Solon High School - A	OH
76	Solon High School - B	OH
77	South Brunswick High School - A	NJ
78	South Brunswick High School - B	NJ
79	Staten Island Technical High School	NY
80	Strath Haven High School	PA
81	Stuyvesant High School - A	NY
82	Stuyvesant High School - B	NY
83	Sylvania Southview High School - A	OH
84	Sylvania Southview High School - B	OH
85	Syosset HS	NY
86	The Hun School of Princeton	NJ
87	The Mount Academy - A	NY
88	The Mount Academy - B	NY
89	The Shipley School	PA
90	Thomas Jefferson HS for Science and Technology	VA

Team #	Team Name	State
91	Townsend Harris High School - A	NY
92	Townsend Harris High School - B	NY
93	Upper Dublin High School	PA
94	Ward Melville High School - A	NY
95	Ward Melville High School - B	NY
96	West Windsor Plainsboro HS North - A	NJ
97	West Windsor Plainsboro HS North - B	NJ
98	West Windsor-Plainsboro High School South - A	NJ
99	West Windsor-Plainsboro High School South - B	NJ
100	Westborough High School A	MA

SATURDAY, FEB 27

EVENTS

10:00 AM to 4:00 PM	Students will compete in events based on the schedule on the following page. The numbers in the table represent team numbers. All events will follow national rules.

PENN PANELS & GAMES

2:30 PM to 5:00 PM	Game Time! (2:30-3:30): Please be on the lookout for an email from us for game suggestions! Penn Panels (3:30-5:00): The Vagelos Integrated Program in Energy Research and other prestigious Penn programs will be hosting panels.

SUNDAY, FEB 28

CAMPUS TOURS & GAMES

11:00 AM to 4:00 PM	Campus Tour (TBD): Take a virtual tour of Penn's campus, led by Penn's Kite & Key club. Game Time! (3:00-3:30): Please be on the lookout for an email from us for game suggestions!

CLOSING CEREMONY

4:00 PM to 6:30 PM	Join us for this year's closing ceremony, which highlights two speakers. This year's keynote speaker will be Grant Sanderson from the popular educational YouTube channel 3blue1brown. Our guest speaker is Dr. Jayatri Das, Chief Bioscientist at the Franklin Institute.

EVENT SCHEDULE

Event	10:00-10:50	11:00-11:50	12:00-12:50	1:10-2:00	2:10-3:00	3:10-4:00
Anatomy & Physiology	1-16	17-33	34-50	51-66	67-83	84-100
Astronomy	1-16	17-33	34-50	51-66	67-83	84-100
Boomilever *	Video Submission due by 10 AM ET on Saturday, Feb 27					
Chem Lab	67-83	84-100	1-16	17-33	34-50	51-66
Circuit Lab	1-16	17-33	34-50	51-66	67-83	84-100
Codebusters	51-66	67-83	84-100	1-16	17-33	34-50
Designer Genes	67-83	84-100	1-16	17-33	34-50	51-66
Detector Building **	1-16	17-33	34-50	51-66	67-83	84-100
Disease Detectives	51-66	67-83	84-100	1-16	17-33	34-50
Dynamic Planet	67-83	84-100	1-16	17-33	34-50	51-66
Experimental Design	34-50	51-66	67-83	84-100	1-16	17-33
Forensics	84-100	1-16	17-33	34-50	51-66	67-83
Fossils	84-100	1-16	17-33	34-50	51-66	67-83
Geologic Mapping	34-50	51-66	67-83	84-100	1-16	17-33
Gravity Vehicle *	Video Submission due by 10 AM ET on Saturday, Feb 27					
Machines **	17-33	34-50	51-66	67-83	84-100	1-16
Ornithology	51-66	67-83	84-100	1-16	17-33	34-50
Ping Pong Parachute *	Video Submission due by 10 AM ET on Saturday, Feb 27					
Protein Modeling **	17-33	34-50	51-66	67-83	84-100	1-16
Solar Power *	34-50	51-66	67-83	84-100	1-16	17-33
Sounds of Music **	67-83	84-100	1-16	17-33	34-50	51-66
Water Quality **	17-33	34-50	51-66	67-83	84-100	1-16
Wright Stuff *	Video Submission due by 10 AM ET on Saturday, Feb 27					
Write It Do It	84-100	1-16	17-33	34-50	51-66	67-83

*Trial Event | **No Build Component | All times in Eastern Time

TOURNAMENT POLICIES

At SOUP, all our event rules follow National Science Olympiad's competition rules. Our tournament policies, as listed below, also match those of National State Science Olympiad from the website.

In all tournaments, all officials, coaches, team members and spectators are expected to abide by the rules as stated in the Official Rules Manual. Violations may include any of the following:

01 | **INTERFERENCE**

Only the team members assigned to the event may enter the competition area along with those supervising and judging the event. All others are to remain out of the room or the competition area at all times. If any student, coach, teacher, chaperone or parent interferes with or disrupts the conduct of the event, the team associated with the person will be penalized at the discretion of the event supervisor in conjunction with the appeals board. The team, coach and the site director will we notified of this action.

02 | **CHEATING**

Any individual who cheats during an event will be penalized by disqualification. The team and the coach will be apprised of this action. If an event team or team member deliberately takes an action that impairs the ability of another team to fairly compete, that team will be disqualified from that event. Depending on the severity of the action taken by the team members, further action by the appeals board may result that the team members are disqualified from other events. Upon reporting this action to the State Board, the team members may be barred from further tournaments.

03 | **VANDALISM**

If a member of a team or a person associated with a team commits an act of vandalism, the team will be disqualified from the tournament. Vandalism means deliberate action that results in damage to property. This includes, but is not limited to, graffiti, damage to facility property, and damage to personal property of competitors, judges and supervisors.

COACH INSTRUCTIONS

We will be using Scilympiad for all events. To use Scilympiad as a coach, please see the following tips. Demo videos will be released soon, courtesy of the National Science Olympiad.

Team Logistics

The team coach is responsible for collecting all the necessary forms from participants and sending them to us in a timely manner. Science Olympiad at the University of Penn (SOUP) has its own team registration form, media release form, and waiver of liability agreement. In addition, we require all of the Pennsylvania Science Olympiad (PASO) forms: the coach form, parent form, and build event form. All of these forms will be emailed in January.

At the end of the tournament, the team coach is responsible for verifying team scores and placements. Following the closing ceremony, we will be shipping out medals, plaques, and trophies. Awards include coach plaques for the top 3 teams, team trophies for top 6 teams, medals for the top 8 teams for non-trial/not optional events, and medals for the top 6 teams for trial/optional events. These awards will be shipped to the team coach's address that is on-file on Scilympiad. Please send us an email if you would like to change your preferred shipping address.

We will be hosting Q&A sessions for coaches in mid-January to early February.

Allowed Materials

Coaches should ensure that participants are aware of the rules set by the National Science Olympiad. Per the COVID rules modifications, each individual participant may have a personal set of reference materials (e.g., binders, single sheets of paper), calculator, or other academic resource(s) as specified in the specific event rules for use during the competition to allow social distancing and to prevent resource sharing. For example, if the event says "Each team may bring 1 sheet of paper," the COVID rules modifications allow each participant to have a sheet of paper as their resource and the contents on the two partners' note sheets can be identical or can be different. If the event says "Each participant may bring 1 sheet of paper," each participant can still bring only 1 sheet of paper.

Video Calls

In the unlikely event that we will need to set up a private video call for an event, the Event Supervisor will set up the video call and distribute the link ahead of time. The Event Supervisor will also allow participants ten minutes to move between events. Setup and preliminary checks will occur in the main Zoom room. Participants will then move to breakout rooms with the Event Supervisor to complete anything necessary for the event. During these calls, participants will not allowed to be together to be equitable to all teams.

We will be using Scilympiad for all events. To use Scilympiad as a participant, please see the following tips. Demo videos will be released soon, courtesy of the National Science Olympiad.

Scilympiad Instructions

Scilympiad allows partners to see our tests at the same time. To ensure your answer will save properly, please use Edge or Chrome as your browser on your desktop or laptop.

Prior to tournament day, participants should create an account using the login ID provided by their coach. To do that, go to the tournament web page and click on "Tournament", then "Student Dashboard." Afterwards, click on "Take online test using Login ID." The first time a participant logs in, the system will ask to create a password. Once logged in, participants should see a list of the events they will be taking. If they cannot see all of the events or if they see extra events, they should let their coach know as soon as possible.

Once participants are on the event page, they will see the key parameters for their test. Participants will also see a chat box for them to communicate with their partner or the Event Supervisor(s). They should check with either partner first to make sure they're both ready to start the test before clicking "Start." As soon as either partner starts the test, the timer will start. When one partner clicks on an answer, the answer will show up on their partner's test immediately. For free responses, the system will save the answer automatically each time a participant clicks outside of the textbox. Please save answers periodically by clicking outside of the textbox. Also, make sure only one person works on a free response question at a time. If person A writes something for a particular question, and person B is also concurrently working on the question, when person A leaves the question, it will override the contents of person B's work. Please be sure partners work on different free response questions at any time. The only exception is for Codebusters' cryptography questions which requires participants to click "Save Answer."

In Scilympiad, the browser keeps track of the duration that the participant leaves the browser or goes to a different tab. To make sure the timer isn't triggered, make sure the team is set up before starting the test (video calls, etc. connected) and that all desktop notifications are turned off. During a test, participants will see the amount of time they have left for the event. When participants are finished, they should click "Submit." If participants are not done by the end of the period, the system will automatically submit the answered questions when time expires.

If you need more help with Scilympiad, please visit the Support tab in scilympiad.com/soup. We have posted additional resources under the webinar icon.

CHEMISTRY & PHYSICAL SCIENCE EVENTS

Chemistry Lab	For this year's Chemistry Lab event, there will be a mix of conceptual and calculation-based questions. Since the tournament will be online, students will not have to expect any hands-on lab activities. However, students may be asked to write the procedure, conclusion, or error analysis for a hypothetical experiment. Topics will involve pH calculations, mass percentage, error analysis, solubility, back titration, precipitation, titration curves, etc. Students should expect to use their scientific calculator for several questions. Students should also come prepared to scan and upload their test in the event that we do ask for work shown on certain problems. We recommend phone applications like Adobe Scan or CamScanner.
Forensics	This year's event will be similar in format to that of previous years, with a crime scene that requires careful analysis of key pieces of evidence in order to identify the perpetrator. However, there will be a few changes in order to help adjust to the online testing platform. Rather than having students perform the experimental section by hand, we will be utilizing a combination of videos, images, and diagrams generated by our own event supervisors. Additionally, students should come prepared with a greater understanding of the underlying principles and concepts behind the techniques (e.g., PCR, blood typing, etc.) because they may find a question or two about those as well.
Protein Modeling	In this event, students will be tested on their knowledge of the chemistry of protein folding, the biology behind protein expression, the scientific techniques used to research proteins, and the CRISPR-Cas9 system and subsequent modifications of this bacterial immune system to transform it into a versatile gene editing tool. Questions will be organized into two major sections: a general exam on the topics above, and a more theoretical section where students will use their understanding to analyze proteins in Jmol and interpret protein research. The proteins used in this theoretical section will be selected from well-studied proteins that are representative of major protein classes and/or relevant to the COVID-19 pandemic.
Machines	In order to adapt to the online test setting, this event will be focused on the written portion, along with a few conceptual and practical questions about the build portion of the event. Topics to be tested include energy, forces, torque, friction, rotational motion, and equilibrium, as well as how they apply to both simple and compound machines. Additionally, there may be questions in the build section regarding data interpretation and problem solving for hypothetical machines. Students can expect a variety of multiple choice and short answer questions on this year's test that assess the given topics at a range of difficulties.

BIOLOGY EVENTS

Anatomy & Physiology	This year's exam will feature a longer test with many more questions.
Designer Genes	This year's exam will have a format that is similar to last year's exam. There will be lots of questions that relate to one another, and the questions will be more case-based than fact-based so that they will be difficult to look up. The event supervisors will stick to multiple-choice mostly to keep things simple in terms of grading, and they are planning to cover all the topics in the rules manual with at least 1 question. Tiebreakers will be integrated into the exam.
Disease Detectives	For this year's exam, the event supervisors want to keep the format largely the same as usual. The exam will have two large case studies composed of mostly short answer or extended response questions, along with a third section that tests general Disease Detectives knowledge, interspersed with smaller case studies of its own.
Ornithology	This year's exam will involve an extended test with more bird call sound files, conceptual questions, "reverse" questions (given the trait, name the bird), hypotheticals, and conservation questions.
Water Quality	This year's exam will be 100-150 questions with more short answers/free response ecology/reef questions to test depth of understanding. For the ID parts, there will be lots of species-specific questions and possibly case studies requiring some depth of understanding. The salinometer testing portion will not be included for this year.

EARTH & SPACE SCIENCE EVENTS

Astronomy*	This year's exam will have a format similar to last year's exam, with more multiple choice questions and fewer calculation based problems (no calculus involved).
Dynamic Planet*	This year's exam will have a format similar to last year's exam, with more multiple choice and short answer questions. There will be 1-2 long paragraph responses.
Fossils	Fossil images will be uploaded onto the Scilympiad testing site, accompanied by short-answer and multiple-choice questions. The test will be longer than the usual offline format because of a lack of stations.
GeoLogical Mapping	Many problems will require written responses to diagrams and given maps (the event supervisors will check if students can upload pictures of maps). If this does not work, the exam will have short answer and multiple choice questions.
Solar Power	This event will be a trial event. There is no build portion. The test will be predominantly short-answer and multiple-choice questions.

* Rules subject to further modification

NATURE OF SCIENCE EVENTS

Circuit Lab	To adapt to the online format, this event will be focused on the written exam portion, with no hands-on circuit section. The written section will be longer, and it will cover the topics in the rules manual with a stronger focus on conceptual questions and a few more circuit analysis questions.
Codebusters*	This year's test will be similar in format to that of previous years. The timed question will be automatically checked and recorded using Scilympiad's built in system. Time spent off the test tab will be penalized, so teams should print out the reference sheet beforehand for their own use.
Write It, Do It*	We will be running this event as Write It, CAD It according to these rules. The writer will gain access to screenshots of the model when the event begins, and they will have 25 minutes to write their description. This description will be passed to the builder (CADer), who will gain access to a CAD file along with the description when the event begins. The CAD program is to be determined.
Experimental Design	This year's event will not have a wet lab portion. Teams will be given a list of materials and equipment to use, and they will design an experiment using those materials and write up a partial report (sections A-F, M, and O of the Experimental Design Checklist). In the second portion of the test, teams will be given an experimental setup and a set of data. They will be asked questions about the statistics of the data, with more focus on conceptual questions than calculations. Topics will include statistics of central tendency, variation, linear regression, and chi-square tests.
Ping-Pong Parachute	This event will be a trial event. Participants will send in one single-take video of their test run with all parameters shown in the video.

* Rules subject to further modification

BUILD EVENTS

Boomilever*	This event will be a trial event. Participants will send in one single-take video of their test run with all parameters shown in the video.
Detector Building	This event has been changed to a fully written format. The length of the test will be adjusted accordingly to be a full-length written exam. This event will count toward the overall team score.
Gravity Vehicle*	This event will be a trial event. Participants will send in one single-take video of their test run with all parameters shown in the video.
Wright Stuff*	This event will be a trial event. Participants will send in one single-take video of their test run with all parameters shown in the video.
Sound of Music	This event has been changed to a fully written format. The length of the test will be adjusted accordingly to be a full-length written exam. This event will count toward the overall team score.

* Your safety is our first priority. For these building events, please submit a video of your team running the device. All video submissions must be filmed at school under the team coach's supervision in order to qualify. Please title the video with the event name, your team number, and where the video was filmed.

Please follow all safety procedures and social distancing guidelines. These events will not count toward the overall team score, but will qualify for trial event awards. Please frequently check this page for additional specifications.

If local guidelines restrict your team's ability to film the device at school, please follow the local guidelines and do not attempt the build event. Teams that are found to be violating safety regulations, including filming at home, will be subject to disqualification.

DEVICE TESTING POLICY FOR ALL TOURNAMENTS APPROVED BY PASO in 2020 and 2021

The testing of devices for Boomilever, Gravity Vehicle, Ping Pong Parachute, and Wright Stuff for any invitational tournament approved by PASO must occur in the school of the participating team and supervised by a coach, even if the school is not located in Pennsylvania. The same requirement applies to PASO regional and state tournaments. The purpose of this requirement is two-fold. First, we are concerned that all safety policies, event rules, and PASO testing procedures (as specified by the PASO State Event Supervisor for an event) are followed, and we believe the best person to insure this is done is a coach. Therefore, goggles must be worn as required by the rules for all device testing. Second, all Covid protocols required by the school must be followed as well. Masks must be worn by all persons during device testing and social distancing must be practiced. If any video submitted for grading for these events shows violations of safety policies, event rules, testing procedures, or Covid protocols, the team may be disqualified from the event or penalty applied to the team score for the event.

We realize that some teams may not have access to the school at the time of a tournament and may not be able to test devices as required by this policy (which means they may not participate in these events). That is why these events have been classified as trial events and do not affect team scores.

Testing of the devices for these events during the construction phase may be done at student homes, provided the PASO Parent Acknowledgement is on file with the head coach. However, PASO will not allow testing of devices for these events to be conducted at student homes for tournaments. If an invitational tournament includes other events not listed above that include any device testing, the testing of those devices for the tournament must be conducted in the school and not at a student home.

Since testing of devices must occur in the school, all tournaments approved by PASO are considered mini/satellite hybrid tournaments. Therefore, each team must submit the Satellite SO form (PASO version) if they plan to participate in events that include device testing. If an administrator will not sign the Satellite SO form, the team may not participate in any event in which device testing is required.

Effective 12/1/2020

For the Penn Science Olympiad Invitational, the following events will be counted as trial events. They will count toward individual awards, but will not count toward the team's total score: Boomilever, Gravity Vehicle, Wright Stuff, Ping Pong Parachute, and Solar Power.

If you have any questions or concerns, please do not hesitate to reach out to us.

- Website: http://pennscienceolympiad.org
- Email: pennscienceolympiad@gmail.com
- Scilympiad: scilympiad.com/soup
- Facebook: facebook.com/ScienceOlympiadatPenn/
- Instagram: instagram.com/ScienceOlympiadatPenn/
- Twitter: twitter.com/pennscioly/
- SciOly.org forum: scioly.org/forums/viewtopic.php?f=294&t=18136
- Live-Tournament Updates: pennscienceolympiad.org/updates/

Announcements:

SOUP | 2021