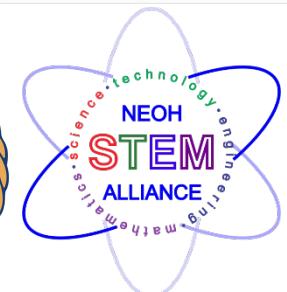


OHIO
HUDSON

A group of approximately 30 students and adults are posed in two rows on gymnasium bleachers. They are all wearing dark green t-shirts with a white graphic design. The students are holding up large, light-colored signs with bold blue letters. The top row holds signs for 'OHIO', and the bottom row holds signs for 'HUDSON'. The students are seated on blue bleachers in a gymnasium setting with a polished wooden floor.



Hudson Middle School Science Olympiad



2021 Season Overview

19th place: US National Tournament

2nd place: Ohio State Tournament

1st place: Ohio Western Regional Tournament

1st place: Allendale Tournament (Michigan)

3rd place: Johns Hopkins Tournament (Maryland)

3rd place: Kenston Tournament (Ohio)

3rd place: Mentor Tournament (Ohio)

5th place: Westlake Tournament (Ohio)

6th place: Cumberland Eagle Tournament (Pennsylvania)

6th place: Northview Tournament (Ohio)

9th place: Solon Tournament (Ohio)

56 students, 25 adult volunteers, 4 high school assistants

Executive Committee

Head Coach

Jordan M. Renna Ph.D.

Build Team Leader

Chirag Patel

Grants Coordinator

Julie Griffiths

Parent Representative

Fangming Du Ph.D.

High School Ambassadors

Iris Renna

Sherry Du

Alex Link

Team Mascot

What is Science Olympiad

- Science Olympiad is a national non-profit organization dedicated to improving the quality of K-12 science education, increasing male, female and minority interest in science, creating a technologically-literate workforce and providing recognition for outstanding achievement by both students and teachers.
- These goals are achieved by participating in Science Olympiad tournaments and non-competitive events, incorporating Science Olympiad into classroom curriculum and attending teacher training institutes.

What is the HMS Science Olympiad Team?

Science Olympiad is much like an academic Olympics in which students on a team compete in 23 different academic events. Students are encouraged to find areas of interest in each of the group events, attend weekly meetings on Monday nights, and engage different scientific disciplines.

There is no pressure to master the scientific content, just to become more familiar with the material and begin to appreciate aspects of each area of STEM.

Division B Events

- Life, Personal & Social Science (5 events)
- Earth & Space Science (5 events)
- Physical Science & Chemistry (5 events)
- Inquiry & Nature of Science (4 events)
- Technology & Engineering (4 events)

<https://www.soinc.org/events/2022-event-table>

https://scio.ly.org/wiki/index.php/Division_B

There are 2 Types of Events



Building events



Testing events

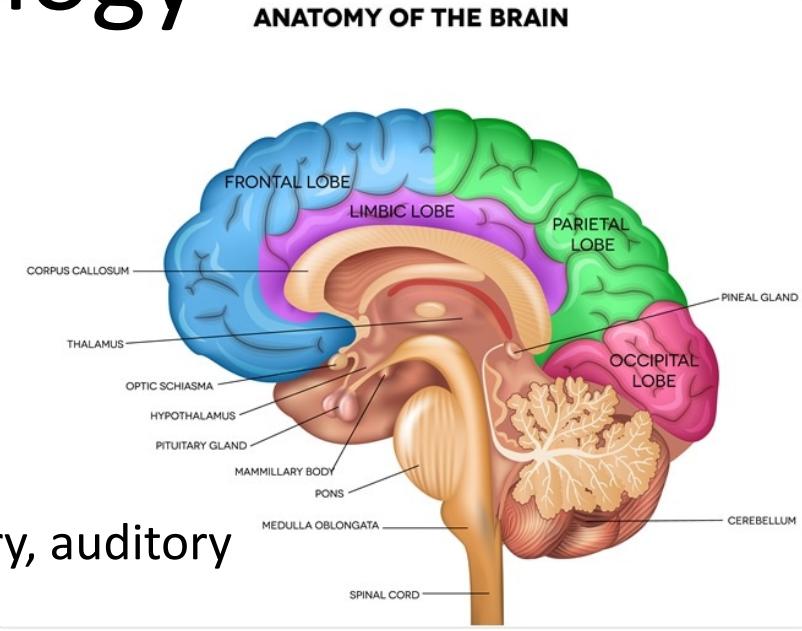
Students work in pairs and are often allowed to bring in notes and/or laboratory supplies

Life Personal & Social Science

- Anatomy and Physiology
- Bio-Process Lab (new)
- Disease Detectives
- Green Generation (new)
- Ornithology

Anatomy and Physiology

- Nervous System
 - Neurons and how they function
 - Basic neuroanatomy
 - Diseases/disorders
- The Five Senses
 - Visual, somatosensory, olfactory, gustatory, auditory
 - Sensory Conversion
 - Diseases/disorders
- Endocrine System
 - Glands
 - Hormones
 - Diseases/disorders

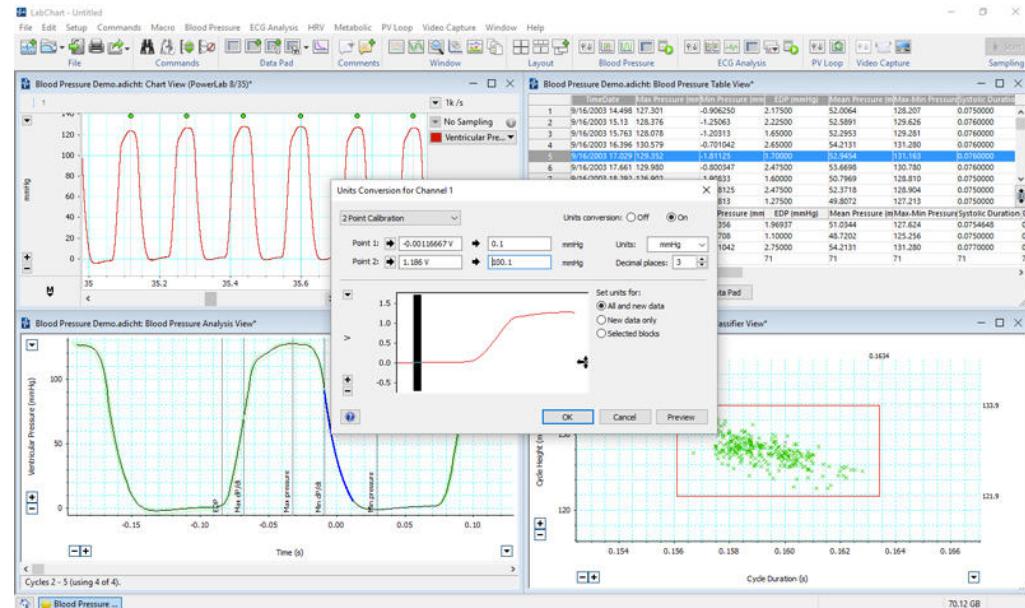


https://www.news-medical.net/image.axd?picture=2020%2F10%2Fshutterstock_284175866.jpg

Competitions will have a written exam (1 page of notes)

Bio-Process Lab

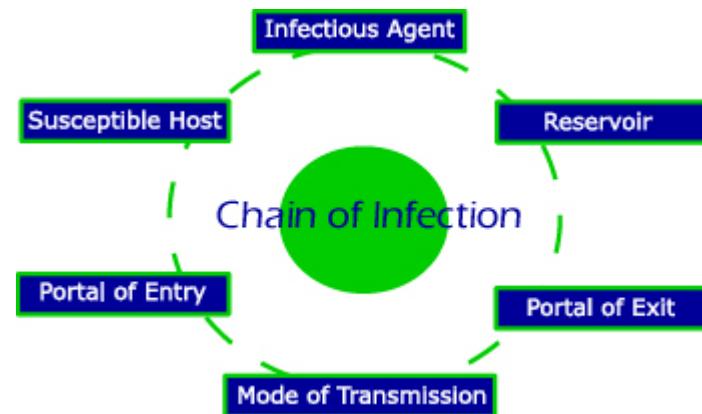
- Participants will formulate hypothesis, solve problems, and analyze data to identify variables, understand cause and effect relationships, and formulate models.
- Participants will apply basic science process skills such as observing, measuring, inferring, classifying, predicting, and communicating.



<https://www.adinstruments.com/sites/default/files/wysiwyg-resources/images/labchart-screen-blood-pressure-units-conversion.jpg>

Competitions will have a written exam (1 page of notes allowed)

Disease Detectives



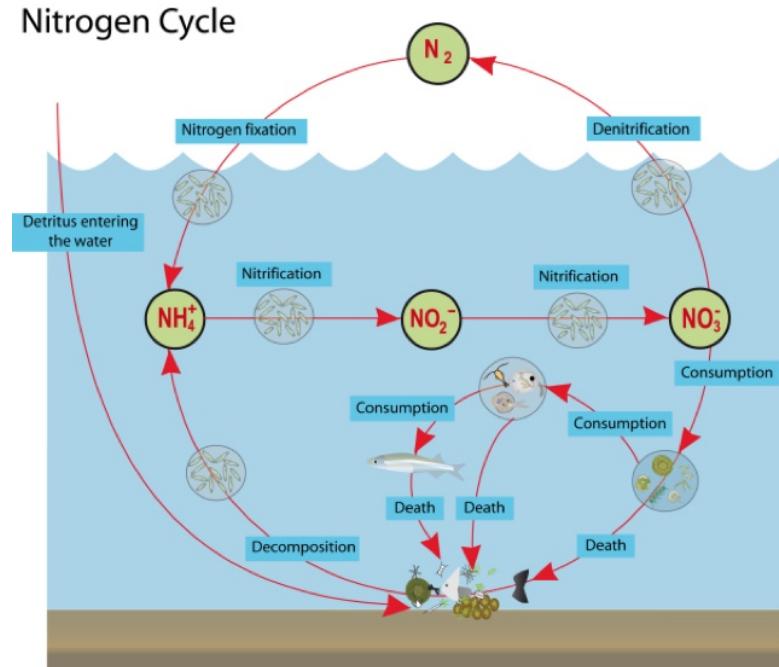
Students will use investigative skills in the scientific study of disease, injury, health and disability in populations or groups of people.

- Students will understand the values of background/surveillance information, be able to conduct and analyze an Outbreak Investigation, evaluate data, identify patterns, and make predictions

Competitions will have a written exam (1 page of notes allowed)

Green Generation

Aquatic, Air and Climate Change



<http://phoenixafreshwater.blogspot.com/2013/04/nitrogen-cycle.html>

- Students will demonstrate an understanding of general ecological principles, the history and consequences of human impact on our environment, solutions to reversing trends and sustainability concepts.

Competitions will have a written exam and lab (1 page of notes)

Ornithology



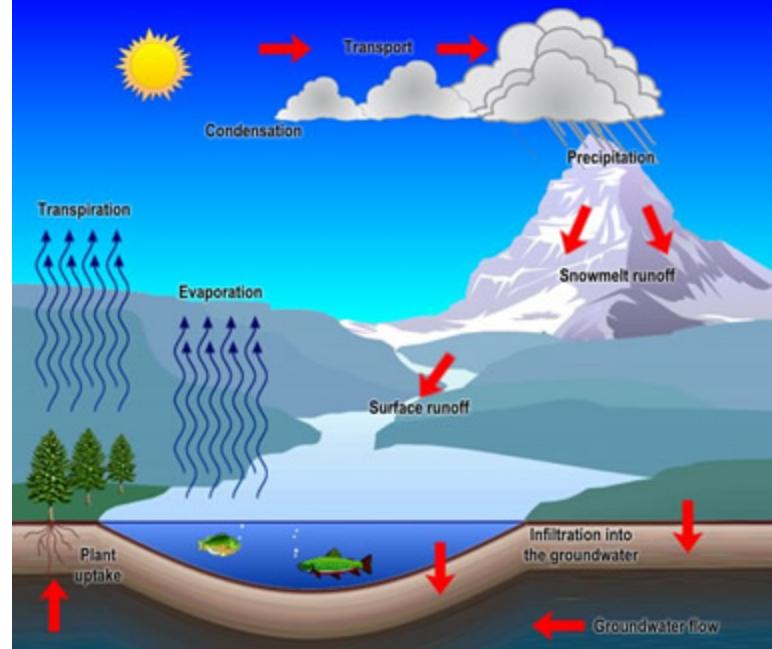
- Tests knowledge on birds
- Identify the order, family and genus of a sample
- Use dental structure to predict food source
- Predict the habitat of a sample
- Identify birds by their call (sound)

Students bring a 3-ring binder and both a State and National Bird list

Earth & Space Science

- Dynamic Planet
- Meteorology
- Road Scholar
- Rocks and Minerals (new)
- Solar System (new)

Dynamic Planet



<https://geology.com/articles/what-is-earth-science/earth-science-system.jpg>

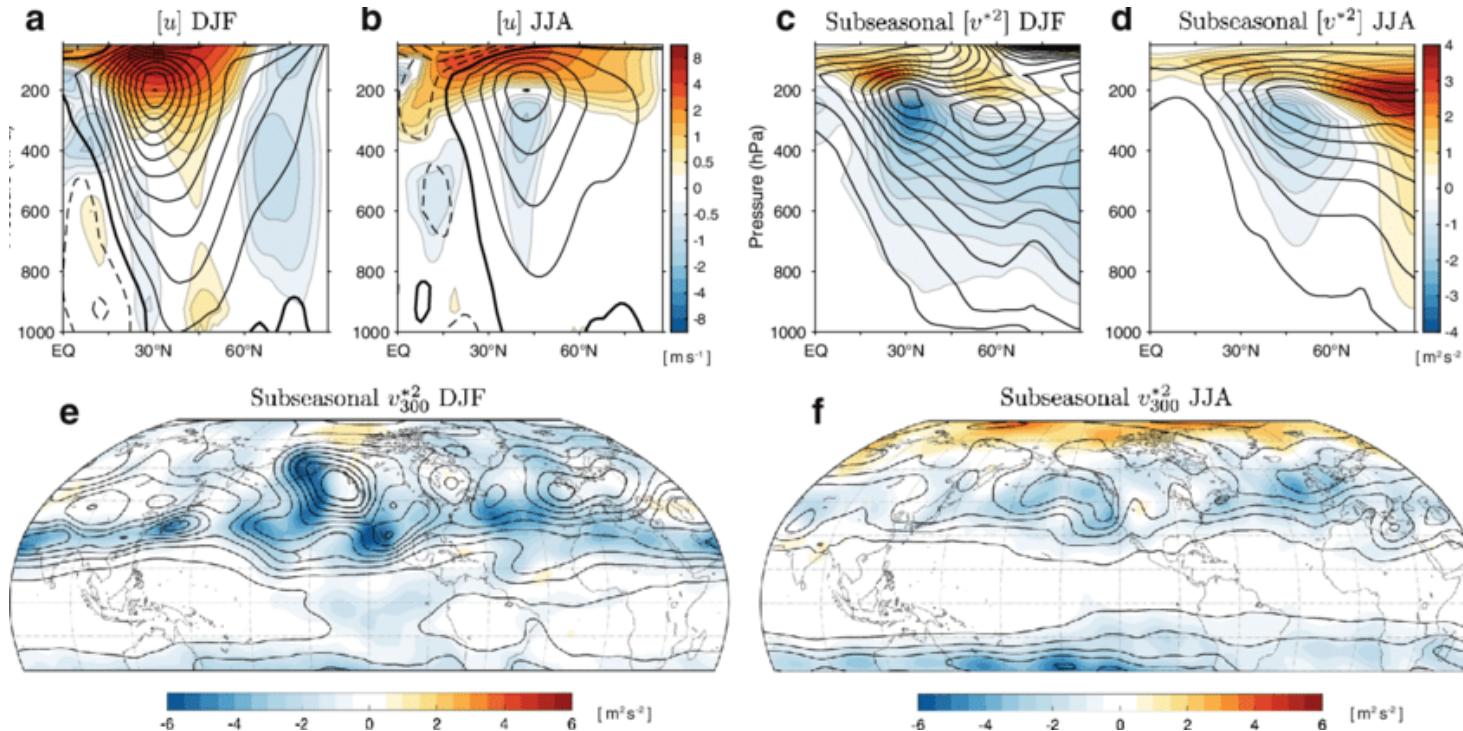
Students will use process skills to complete tasks related to hydrology.

- Surface currents, waves, formation of reefs, topographic features on continental margins, seawater.
- Study of water management, water cycle, and environmental watershed sustainability.
- Interpretation of geological data.

Competitions will have a written exam (2 inch 3 ring binder)

2021 event

Meteorology



<https://www.researchgate.net/publication/336831618/figure/fig2/AS:818306470666248@1572110874372/Climatology-contours-and-climate-change-response-shading-of-a-b-the-zonal-mean-zonal.png>

Participants will use scientific process skills and quantitative analysis to demonstrate an understanding of the factors that influence world climate and climate change through the interpretation of climatological data, graphs, charts and images.

Competitions will have a written exam (2 pages of notes)

Road Scholar



<http://media.cleveland.com/west-geauga/photo/we2960126cjpg-ad571da236d2a294.jpg>

Teams will answer interpretive questions that may use one or more state highway maps, USGS topographic maps, Internet-generated maps, a road atlas or satellite/aerial images.

- Learn how read maps and draw maps.
- Use storylines to find a specific location on a map using clues embedded in the story.

Competitions will have a written exam that involve maps, compass, protractor and ruler

Rocks and Minerals



<https://2f96be1b505f7f7a63c3-837c961929b51c21ec10b9658b068d6c.ssl.cf2.rackcdn.com/products/002277.jpg>

Participants identify sedimentary environments and the rock cycle.

- Identification will be limited to **rocks, minerals, and gems on the Science Olympiad Official Rocks and Minerals List**

Competitions will have a written exam (2 inch 3 ring binder)

Solar System



https://res.cloudinary.com/dk-find-out/image/upload/q_80,w_1920,f_auto/Stars_and_galaxy_gaf4dy.jpg

Students will demonstrate an understanding of the properties and evolution of stars and galaxies.

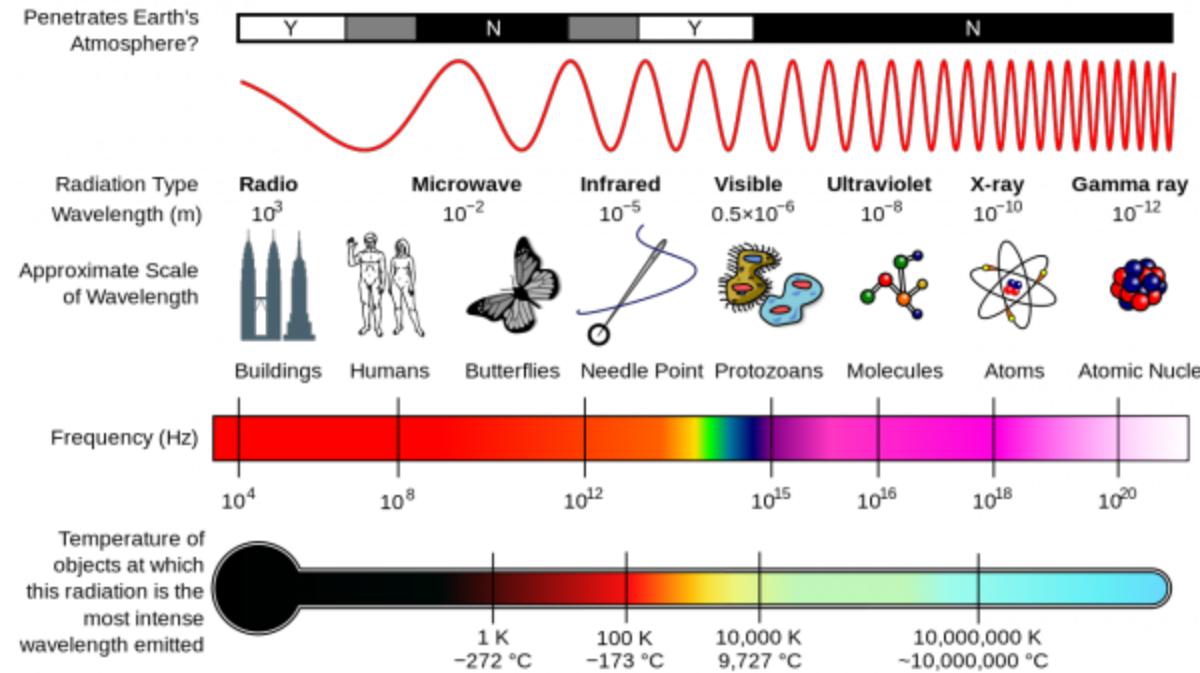
- Students will be asked to identify stars, constellations, and deep sky objects.
- Participate in hands-on and interpretive tasks like: spectral classification of stars, stellar and galactic evolution, Hubble classification of galaxies.

Competitions will have a written exam (2 pages of notes)

Physical Science & Chemistry

- Crave the Wave (new)
- Crime Busters
- Food Science
- Sounds of Music (new)

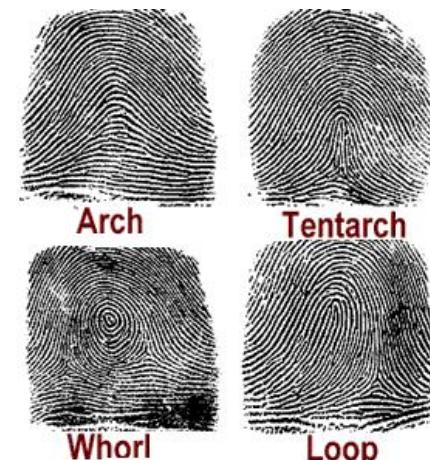
Crave the Wave



- In this event competitors must demonstrate knowledge and process skills needed to solve problems and answer questions regarding all types of waves and wave motion.

3-ring binder allowed for test portion

Crime Busters



Teams will identify the perpetrators of a crime or crimes by using paper chromatography and analysis of unknown solids, liquids, and plastics found at the scene of a crime.

- Learn how to decide which tests should be conducted and how to conduct them
- Identify different patterns of finger prints, analyze DNA evidence, compare shoe-prints, etc.

Food Science



Students will answer questions about food chemistry, with a focus on fermentation and the process of pickling.

- Sample activities: students could build a hydrometer capable of measuring sugar solutions between 1 and 10% (mass/volume).

Competitions will have a written exam (1 page of notes)

Sounds of Music



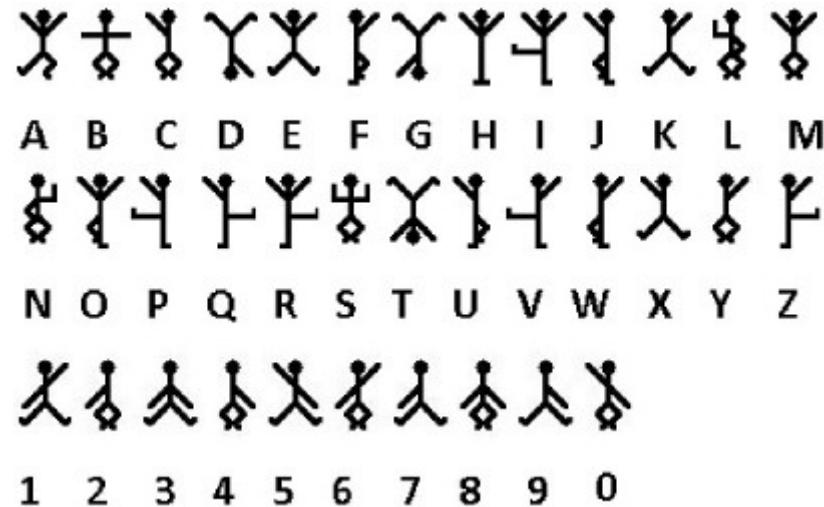
<https://earthscience.rice.edu/wp-content/uploads/2020/02/2020-Rice-SOI-AG-sound-event-scaled-e1581446728175.jpg>

- Teams must construct and tune one device prior to the tournament based on a one-octave 12-tone equal tempered scale and complete a written test on the physics of sound and music concepts.

Inquiry & Nature of Science

- Codebusters (new)
- Experimental Design
- Write It, Do It

Codebusters



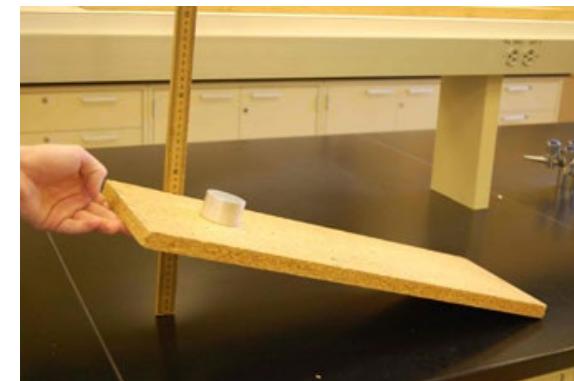
<https://scioly.org/wiki/images/2/27/DancingMenCipher.png>

- Teams will cryptanalyze and decode encrypted messages using cryptanalysis techniques for historical and modern advanced ciphers.

Experimental Design

Given a set of unknown objects, teams will design, conduct, analyze and write-up an experiment.

- Example question: You have been asked to determine the maximum height for a ramp before a cube shaped object begins to slide down the ramp.



Write It, Do It



A technical writing exercise where students write a description of a contraption and other students will attempt to recreate it using only the written description.

- One team member will be shown an object constructed of small part. They will have 25 minutes to write a description of the object. Their teammate will use those instructions to try and recreate the object.

HMS Build Team

Technology & Engineering

- Ping-Pong Parachute (from Inquiry & Nature of Science)
- Bridge (new)
- Electric Wright Stuff (new)
- Mission Possible
- Mousetrap Vehicle
- Storm the Castle (from Physical Sciences & Chemistry)

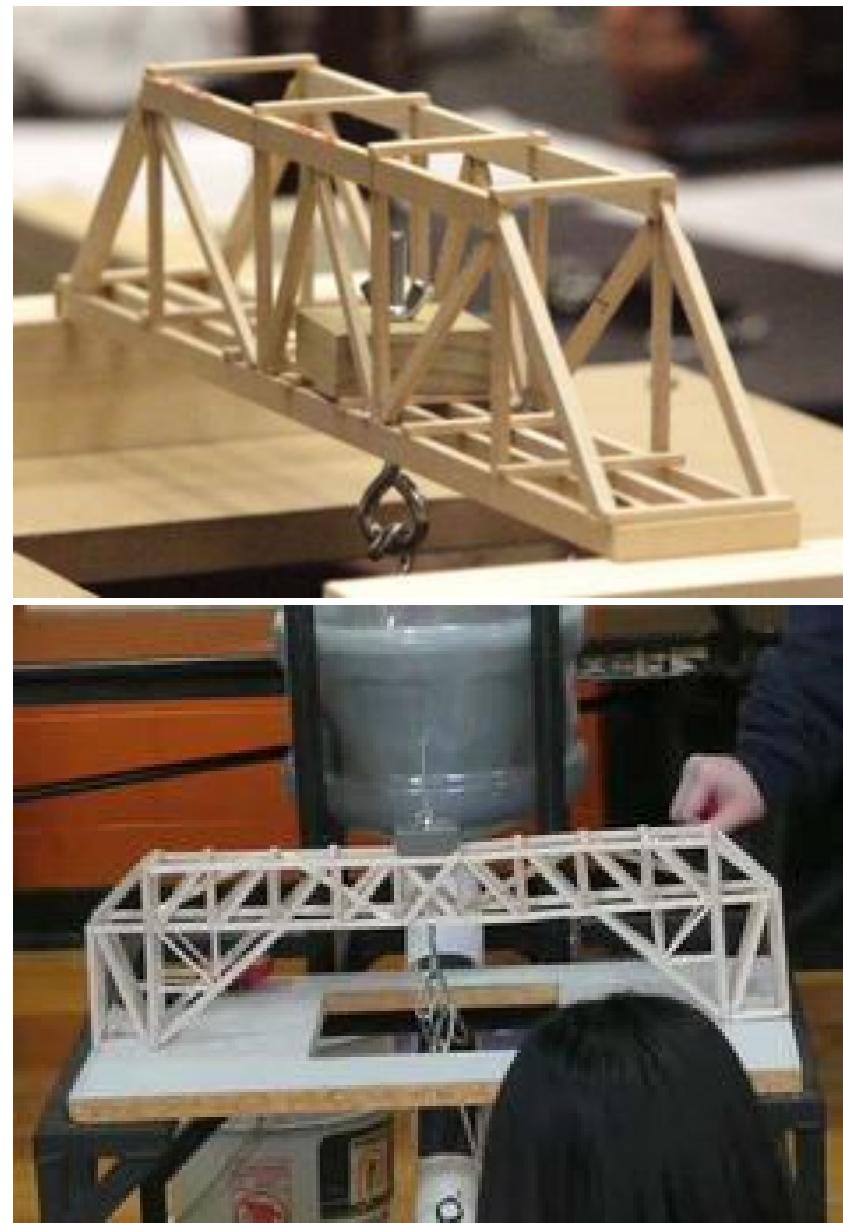
Ping Pong Parachute



- Students will design and build two bottle rockets to launch a ping pong ball attached to a parachute to stay aloft for the greatest amount of time.

Bridges

- Teams will design and build a Bridge (Structure) meeting requirement specified in these rules to achieve the highest structural efficiency.



NEW event

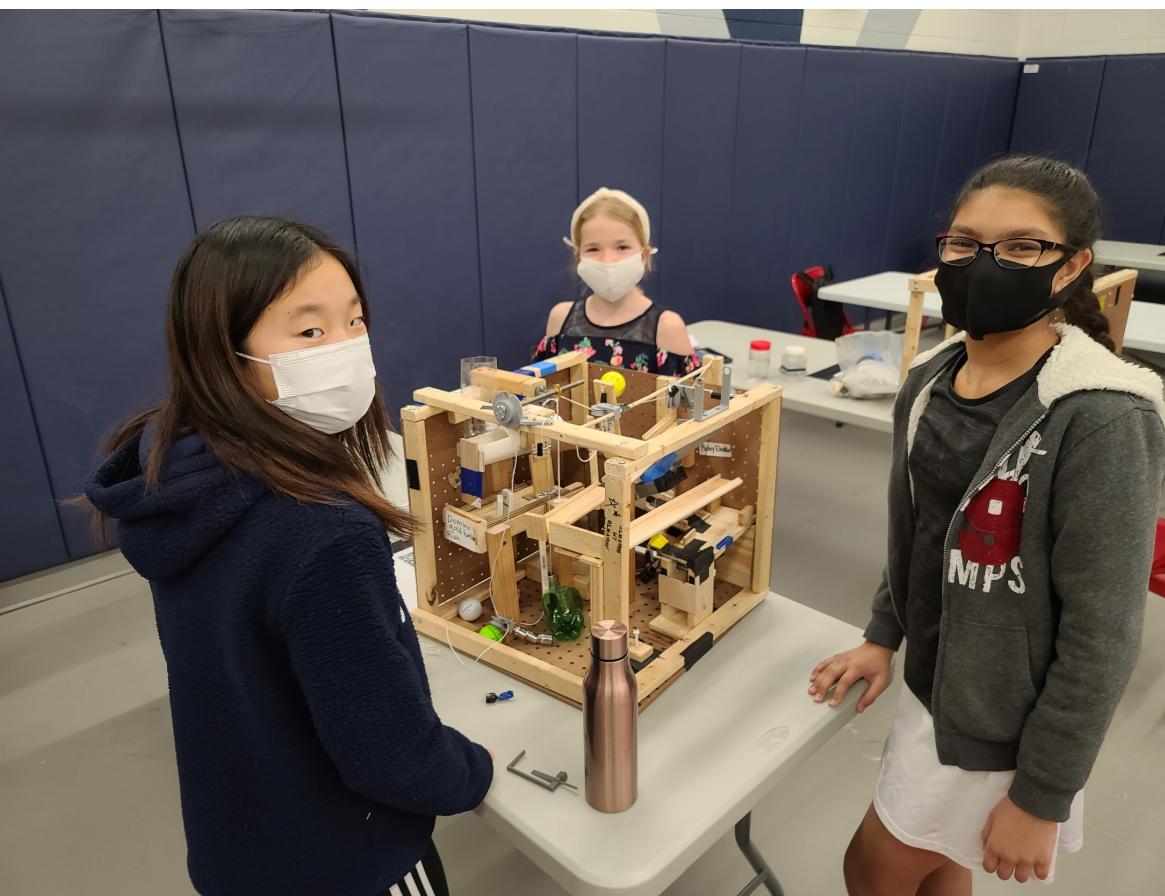
Electric Wright Stuff



- Prior to the tournament teams design, construct, and test free flight electric-powered monoplanes to achieve maximum time aloft.

Mission Possible

- Students build a Rube Goldberg-like device that completes required START and FINAL ACTIONS through a series of specific actions.

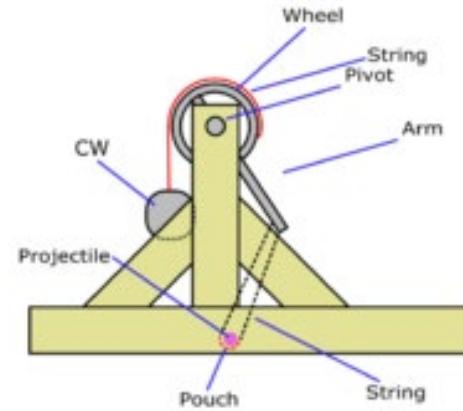


Mouse Trap Vehicle



Students will design, build and test a vehicle using one mousetrap as its sole means of propulsion to reach a target as quickly and accurately as possible.

Storm the Castle



Prior to the competition, teams will design, construct and calibrate a single device capable of launching projectiles onto a target and collect data regarding device parameters and performance.

2022 Team Organization

- Travel Team (48 students)
- Regional Science Olympiad Team (30 students)
- State Science Olympiad Team (15 students)
- Students will participate in 3-4 events

HMS SciOly Student Expectations

We recognize that our students are involved in many activities. Because we can only select 48 students, we are hoping to identify and attract highly committed students. This means students will be asked to:

- Prioritize tournaments and be present at all tournaments (except in extenuating circumstances)
- Attend the Akron Regional if selected (virtually) (30 students)
- Attend the State Tournament if selected (virtually)
- Regularly attend all Monday practices
- Participate in extra practice sessions (which may be held on the weekends)
- Support one another, while exemplifying good sportsmanship
- Attend awards presentations at HMS

Travel Science Olympiad Team

Student Registration

- Monday, September 13th 6-9pm (bring ipad). We will send out a signup genius by Thursday for timeslots.
- Students will take a STEM quiz based off of our own Bio-Process Lab study guide that we will email to everyone by Thursday.
- Students that attend will be given a paper with a link to online registration where they will **rank their event preferences** and **provide parent contact information**.
- The Travel Team will be announced via email within a week or two.
- Students will be slotted into their events based on event preference rankings and then can join event practices.

Events are divided up for practices (this is last year's schedule)

Morning Block			All Groups Meet		
Event	Mentor	Time	Event	Mentor	Time
Anatomy Physiology	Qin Liu	6pm - 6:40pm	Anatomy Physiology	Qin Liu	6pm - 6:20pm
Circuit Lab	Chuck Juda	6pm - 6:40pm	Circuit Lab	Chuck Juda	6pm - 6:20pm
Road Scholar	Jun Li	6pm - 6:40pm	Road Scholar	Jun Li	6pm - 6:20pm
Event	Mentor	Time	Event	Mentor	Time
Density	Fangming Du	6:40pm - 7:20pm	Density	Fangming Du	6:20pm - 6:40pm
Fossils	Lisa Borgerding	6:40pm - 7:20pm	Fossils	Lisa Borgerding	6:20pm - 6:40pm
Water Quality	Heather Link	6:40pm - 7:20pm	Water Quality	Heather Link	6:20pm - 6:40pm
Event	Mentor	Time	Event	Mentor	Time
Dynamic Planet	Todd Harris	7:20pm - 8pm	Dynamic Planet	Todd Harris	6:40-7pm
Machines	Harry Liu	7:20pm - 8pm	Machines	Harry Liu	6:40-7pm
Heredity	Sarah Busi	7:20pm - 8pm	Heredity	Sarah Busi	6:40-7pm
Afternoon Block			Event		
Event	Mentor	Time	Event	Mentor	Time
Food Science	Shibha Arora	6pm - 6:40pm	Food Science	Shibha Arora	7pm - 7:20pm
Reach for the Stars	Jason Peterson	6pm - 6:40pm	Reach for the Stars	Jason Peterson	7pm - 7:20pm
Game On	Shuling Nie	6pm - 6:40pm	Game On	Shuling Nie	7pm - 7:20pm
Event	Mentor	Time	Event	Mentor	Time
Crime Busters	Fangming Du	6:40pm - 7:20pm	Crime Busters	Fangming Du	7:20pm - 7:40pm
Ornithology	Megan Griffiths	6:40pm - 7:20pm	Ornithology	Megan Griffiths	7:20pm - 7:40pm
Experimental Design	Suzanne Heckroth	6:40pm - 7:20pm	Experimental Design	Suzanne Heckroth	7:20pm - 7:40pm
Digital Structures	Chirag Patel	6:40pm - 7:20pm	Digital Structures	Chirag Patel	7:20pm - 7:40pm
Event	Mentor	Time	Event	Mentor	Time
Disease Detectives	Liya Yin	7:20pm - 8pm	Disease Detectives	Liya Yin	7:40pm - 8pm
Meteorology	Chen Ling	7:20pm - 8pm	Meteorology	Chen Ling	7:40pm - 8pm
WIDI	Sharon Wasco	7:20pm - 8pm	WIDI	Sharon Wasco	7:40pm - 8pm

Date	Block
Monday, October 4th	Morning Block
Monday, October 11th	Afternoon Block
Monday, October 18th	Afternoon Block
Monday, October 25th	Morning Block
Monday, November 1nd	Afternoon Block
Monday, November 8th	Morning Block
Monday, November 15th	Afternoon Block
Monday, November 22nd	Morning Block
Monday, November 29th	Afternoon Block
Monday, December 6th	Morning Block
Monday, December 13th	Afternoon Block
Monday, December 20th	Morning Block
Monday, December 27th	Afternoon Block
Monday, January 3th	Morning Block
Monday, January 10th	Afternoon Block
Monday, January 17th	Morning Block
Monday, January 24th	Afternoon Block
Monday, January 31st	Morning Block
Monday, February 7th	Afternoon Block
Monday, February 14th	Morning Block
Monday, February 21st	Afternoon Block
Monday, February 28th	Morning Block
Monday, March 7th	Afternoon Block
Monday, March 14th	All Groups Meet
Monday, March 21st	All Groups Meet
Monday, March 28th	All Groups Meet
Monday, April 4th	All Groups Meet

Practices are Monday evening 6-8pm via Zoom

Build Team practices at HMS on Friday from 6:30-8:30pm

Competition Schedule

- November Tournament (3 teams)
- Bird S/O Tournament (mini): 12/11 – 12/18 (3 teams)
- Westlake Tournament (satellite): 01/8 (3 teams)
- Solon Invitational (in person): 01/15 (3 teams)
- Centerville Tournament (satellite): 01/29 (3 teams)
- Mentor Tournament (in person): 02/12 (3 teams)
- Kenston Tournament (in person): TBD (3 teams)
- Akron Regional: 1st or 2nd week of March (2 teams)
- Ohio State Tournament: Early April (1 team)

Typical Competition (50-100 Teams)

Hudson Middle School		Coach Renna	205-478-6004	Home Room	ASEC 122		Akron Invitational 3/9/2019
Team 18	8-8:50am	9-9:50am	10:05-10:55am	11:10am-12pm	12:15-1:05pm	1:20-2:10pm	2:25-3:15pm
Luca Baloi	Impound	Meteorology (KO 203)	Anatomy (ASEC B213)	Crime Busters (KNCL 304)	Dynamic Planet (CRH 120)	Potions & Poisons (SHS 129)	Circuit Lab (MG 304)
Deja Bao	Battery Buggy	Ethan Jing	Sherry Du	Sarah Ma	Annabel Fauver	Sarah Ma	Ryan Heckroth
Noah Bartlett	Roller Coaster	Noah Barlett	Melissa Hanson	Deja Bao	Elania Hunkar	Luca Baloi	Sam Vogel
Kaitlyn Bonnette	Thermodynamics	Water Quality (ASEC B221)	Game On (SHS 132)	Herpetology (KO 214)	Heredity (ASEC D404)	Road Scholar (SHS 112)	Fossils (CAS 140)
Aiden Dine		Sarah Ma	Jennifer Zhang	Ethan Jing	Sherry Du	Annabel Fauver	Annabel Fauver
Sherry Du		Alex Link	Deja Bao		Melissa Hanson	Melissa Hanson	Jennifer Zhang
Annabel Fauver		Write It Do It (CAS 143/144)	Experimental Design (SHS 229)	Disease Detectives (CAS 134)	Elastic Launch Gliders (SRWC Blue Gym)	Solar System (Zook 241 StA)	Thermodynamics (ASEC B206)
Melissa Hanson		Ryan Heckroth	Luca Baloi	Luca Baloi	Kaitlyn Bonnette	Noah Barlett	Sherry Du
Ryan Heckroth		Sam Vogel	Ryan Heckroth	Melissa Hanson	Aiden Dine	Elania Hunkar	Sarah Ma
Elaina Hunkar			Sam Vogel	Density Lab (KNCL 308)		Boomilever (HCTR Commons)	
Ethan Jing				Sherry Du		Kaitlyn Bonnette	
Alex Link				Kaitlyn Bonnette		Aiden Dine	
Sarah Ma				Sam Vogel			
Sam Vogel				Aiden Dine			
Jennifer Zhang				Roller Coaster (Bierce 154)			
				Battery Buggy (SRWC Court 3)	Alex Link		
				Elaina Hunkar	Elaina Hunkar		
				Noah Barlett			

Team 19		8-8:50am	9-9:50am	10:05-10:55am	11:10am-12pm	12:15-1:05pm	1:20-2:10pm	2:25-3:15pm
Sean Custy	Impound	Meteorology (KO 203)	Anatomy (ASEC B213)	Crime Busters (KNCL 304)	Dynamic Planet (CRH 120)	Potions & Poisons (SHS 129)	Circuit Lab (MG 304)	
Owen Dailey	Battery Buggy	Even Peterson	Even Peterson	Chase DeWitt	Brody Ogden	Jocelyn Oh	Yeonwoo Yu	
Chase DeWitt	Roller Coaster		Hannah Lee	Jocelyn Oh	Sean Custy	Iliana Jones	Owen Daily	
Isaac Gallegos	Thermodynamics	Water Quality (ASEC B221)	Game On (SHS 132)	Herpetology (KO 214)	Heredity (ASEC D404)	Road Scholar (SHS 112)	Fossils (CAS 140)	
Iliana Jones		Jocelyn Oh	Brody Ogden	Luke Kremser	Daniel Kim	Luke Kremser	Iliana Jones	
Daniel Kim		Audra Lozina	Evelyn Lear	Evan Peterson	Evelyn Lear	Isaac Gallegos		
Luke Kremser		Write It Do It (CAS 143/144)	Experimental Design (SHS 229)	Disease Detectives (CAS 134)	Elastic Launch Gliders (SRWC Blue Gym)	Solar System (Zook 241 StA)	Thermodynamics (ASEC B206)	
Evelyn Lear		Chase DeWitt	Audra Lozina	Isaac Gallegos	Isaac Gallegos	Even Peterson	Daniel Kim	
Hannah Lee		Erica Liu	Chase DeWitt		Yeonwoo Yu		Daniel Kim	Audra Lozina
Erica Liu			Jocelyn Oh	Density Lab (KNCL 308)		Roller Coaster (Bierce 154)		
Audra Lozina				Hannah Lee		Owen Daily		
Brody Ogden				Sean Custy	Audra Lozina		Yeonwoo Yu	
Jocelyn Oh				Erica Liu	Boomilever (HCTR Commons)			
Even Peterson				Battery Buggy (SRWC Court 3)	Sean Custy			
Yeonwoo Yu				Owen Daily	Yeonwoo Yu			
				Yeonwoo Yu				

We need Adult Volunteers

- Develop a plan for the season
- Provide study resources via Google Team Drive
- Make practice tests or mock-competitions for that specific event
- Assist the students in safely constructing structures

Parent and High School Volunteers



Costs

- \$70 fee that helps to offset the costs for supplies, team and tournament registration.
- Each student will need to purchase a pair of safety goggle. These are less than \$5 at Home Depot/Lowes and are rated for proper eye protection.

Questions

- By Thursday of this week I will email out the rules sheet for the tryout and the sign-up genius.
- If you have not been getting emails from me, please come provide me with your email address.
- If you want to be an event mentor, there will be a place for you to sign up on the student survey we send out after the test.
- You can reach Coach Renna:
hmsscienceolympiad@hudson.k12.oh.us
- Middle School is Division B. For event information please visit:
 - <https://www.soinc.org/events/2022-event-table>
 - https://scily.org/wiki/index.php/Division_B

