2021-22
Event Rules Manual
AA Division

Auburn University
April 30, 2022

Auburn ESO
Tentative Event Schedule
April 30, 2022

Scheduled Events	Session	Time Block	Session Length	Max. # students	Location	
A is for Anatomy	1	9:00-9:30	30	2	A	B
Barge Building	1	9:00-9:30	20	2	C	
Grasp a Graph	1	9:00-9:30	30	2	A	B
Leaf & Tree Finder	1	9:00-9:30	20	2	A	B
Starry, Starry Night	1	9:00-9:30	30	2	A	B
Aerodynamics	2	9:45-10:15	30	2	C	
Calculator Contest	2	9:45-10:15	30	2	A	B
Categories	2	9:45-10:15	30	3	A	B
Map Reading	2	9:45-10:15	30	2	A	B
Rock Hound	2	9:45-10:15	30	2	A	B
Bridging the Gap	3	10:30-11:15	45	2	C	
It's Elemental	3	10:30-11:15	45	2	A	B
Knock, Knock-Who's There?	3	10:30-11:15	45	2	A	B
Measurement & Metrics	3	10:30-11:15	30	2	A	B
Weather or Not	3	10:30-11:15	45	2	A	B
Deep Blue Sea	4	11:30-12:30	20	2	A	B
Food for Thought & Energy	4	11:30-12:30	60	2	A	B
Grab a Gram	4	11:30-12:30	60	2	A	B
Pastamobile	4	11:30-12:30	60	4	C	
Lunch Break		12:30-1:30			n/a	
Awards Ceremony		1:30-2:00			C	

2021-2022
Alabama ESO Event Clarification

Event	Run Time	Materials Allowed	Number of Participants	Clarifications	Tiebreaker	Materials Provided
A is for Anatomy	30	Writing utensil	2	Nervous, respiratory and digestive system	Predetermined questions	None
Aerodynamics	30	Writing utensil	2	10 minutes to build; Each team member will throw one	Best single score; shortest build	Scissors, two pieces of plain copy paper per team and 5 cm o fmasking tape
Barge Building	20	Writing utensil	2	Teams will have 10 minutes to build and 4 minutes to load (or	Accuracy of prediction; time	15x15 cm piece of aluminum, cargo, safety goggles
Bridging the Gap	45	Writing utensil	2	Teams will have 20 minutes to build.	Weight held; shortest build	Scissors, unspecified length of masking tape, unspecified building materials
Calculator Contest	30	Writing utensil	2	None	Time	Calculator
Categories	30	Writing utensil	3	See Event Rules Maual for complete list	Time	None
Crash Landing	50	Writing utensil	2	Teams will have 25 minutes to build	Lightest device	Building materials, egg
Deep Blue Sea	20	Writing utensil	2	Marine flora and fauna found in the Gulf of Mexico	Predetermined questions	None
Food for Thought & Energy	60	Writing utensil	2	None	Predetermined questions	None
Grab a Gram	60	Writing utensil	2	None	Best single score	None
Grasp a Graph	30	Writing utensil	2	None	Predetermined questions	None
It's Elemental	45	Writing utensil	2	None	Predetermined questions	None
Knock, Knock-Who's There?	45	Writing utensil	2	None	Predetermined questions	None
Leaf & Tree Finder	20	Writing utensil, charts, keys,	2	See Event Rules Maual for complete list	Predetermined questions	None
Map Reading	30	Writing utensil	2	None	Predetermined questions	Ruler, calculator
Measurement & Metrics	30	Writing utensil	2	None	Predetermined questions	Ruler, calculator
Pastamobile	60	Device	4	None	Greatest distance of intact device	None
Rock Hound	30	Writing utensil, chart (8.5x11"	2	See Event Rules Maual for complete list	Predetermined questions	None
Starry, Starry Night	30	Writing utensil	2	None	Predetermined questions	None
Weather or Not	45	Writing utensil	2	Content includes images and weather measurement tools	Predetermined questions	None

A is for Anatomy

1. DESCRIPTION: This event will consist of a written test in which the contestants will view models, slides, and pictures to identify organs from the following human body systems both structure and function will be tested in a series of written questions.
   1. Skeletal
   2. Muscular
   3. Digestive*
   4, Respiratory*
   5. Circulatory
   6. Urinary
   7. Nervous*
   8. Sensory
   9. Endocrine

2. ESSENTIAL STANDARDS ALIGNMENT: ALCOS

3. TEAM OF UP TO: 2

4. MAXIMUM TIME: 30 min.

5. RESOURCES NEEDED: None

6. EVENT LEADERS: Must provide writing instruments and student response sheets for each team.

7. SAFETY REQUIREMENTS: None

8. IMPOUND: No

9. THE COMPETITION: This event will be run in a station format.
   1. Every team will be given an answer sheet. Team member may consult with each other by writing (no talking). Only one answer for each question will be accepted. Team members will move through 20 stations answering approximately 40 questions. Questions will be at the stations or in a test booklet.
   2. At the end of the testing period, the questions and answer sheet will be collected from those teams who have not turned in their responses.

10. SCORING: Points will be awarded for the accuracy of responses. Correct spelling will be used to break ties. Time is not a factor.

11. EVENT RESOURCES:
    See the Event Resources tab on our website at aub.ie/eso for instructions, videos and more.

*2021-22 Study Guide

Nervous System, including brain, spinal cord and neurons.
Respiratory System including the nose and complete respiratory tract.
Digestive System, including mouth and associated structures, stomach and associated structures, small and large intestine with associated structures, bile ducts and pathway of food through the digestive tract.

Aerodynamics

1. DESCRIPTION: Each two-member team will build two paper airplanes, to be flown a distance of at least five meters, landing on a predetermined target. Airplanes must be of a folded aerodynamic design. Crumpled wads of paper do not qualify.

2. ESSENTIAL STANDARDS ALIGNMENT: ALCOS

3. TEAM OF UP TO: 2

4. MAXIMUM TIME: 30 min.

5. RESOURCES NEEDED: None

6. EVENT LEADERS: Must provide scissors, two pieces of plain white paper for each team, and 5 cm of masking tape.

7. SAFETY REQUIREMENTS: None

8. IMPOUND: No

9. THE COMPETITION: This event will be run in a station/test/lab format.
    1. Two sheets of plain white paper will be supplied for each team along with approximately five centimeters of masking tape and a pair of scissors. Two planes will be constructed.
    2. Planes flown in competition must be made on site, during the time allotted, using only the materials provided by the event supervisors.
    3. Planes will be thrown from behind a line on the floor aimed at a specified target more than 5 but less than twelve meters distance.

10. SCORING: After the flight, the distance will be measured from the center of the target to the nose of the airplane where it first landed. The distance from the target will become the team's score. Each team member will fly one of the two planes once. Team score will be determined by adding the two scores. The lowest score, signifying the closest to the target, will be the winner. In case of a tie, the best single flight will break the tie.

11. EVENT RESOURCES:
    See the Event Resources tab on our website at aub.ie/eso for more information.

Barge Building

1. DESCRIPTION: Teams will demonstrate their understanding of barges by building them out of aluminum foil. Aluminum foil barges must be able to support a large number of objects without getting them wet.

2. ESSENTIAL STANDARDS ALIGNMENT: ALCOS

3. TEAM OF UP TO: 2

4. MAXIMUM TIME: 20 min.

5. RESOURCES NEEDED: Teams will need pencils. No other materials are allowed.

6. EVENT LEADERS: Must provide 15x15 cm piece of aluminum foil as well as the cargo pieces and pans with water to test barges. Paper will be provided for predictions.

7. SAFETY REQUIREMENTS: High Impact safety goggles are required

8. IMPOUND: No

9. THE COMPETITION: This event will be run in a station/test/lab format.
    1. Each team will be given a 15 x 15 cm piece of aluminum foil by the event supervisor. Each team will have 10 minutes to construct their barges and turn them into the supervisor. No other materials may be used in building the barge.
    2. Each team will then be given 5 minutes to load their barges.
    3. The event supervisor will inform each team of the average mass of each cargo piece before they begin their construction. The cargo may be pennies, washers, paper clips, marbles, or other similar objects. The cargo will not be known until the time of the competition.
    4. The student barge captain and his teammate must predict the number of pieces of cargo that the barge will hold. The barge must then be loaded until it sinks. The piece that caused the barge to sink will not count in the total cargo. Sinking occurs when water enters the barge.
    5. The event supervisor will provide the barge captain with the cargo to be loaded. Each piece must be loaded one at a time while the barge is floating in a pan of water.

10. SCORING: The winner of this event will be the team with the highest score. The score will be determined by the following formula: amount of cargo held times 10 minus the difference between predicted amount and actual amount. For example: if the team predicts their barge will hold 70 pieces and it sinks at 57, their score will be 57 x 10 minus the difference between 70 and 57 which is (570 – 13 = 557) points. Ties will be broken by accuracy of the prediction. If the judges determine that a contestant intentionally sinks his boat at or near the predicted number, that team will be disqualified and receive participation points only.

EVENT RESOURCES:
See the Event Resources tab on our website at aub.ie/eso for instructions, videos and more.

Bridging the Gap

1. DESCRIPTION: This event tests students' abilities to build a lengthy, strong, and stable bridge from common materials.

2. ESSENTIAL STANDARDS ALIGNMENT: ALCOS

3. TEAM OF UP TO: 2

4. MAXIMUM TIME: 45 min.

5. RESOURCES NEEDED: Teams will need a writing utensil.

6. EVENT LEADERS: Must provide student response sheets for each team, scissors.

7. SAFETY REQUIREMENTS: None

8. IMPOUND: No

9. THE COMPETITION:
    1. Students will be supplied with a variety of common materials such as paper, tape, straws, pins, string, etc. at the Olympiad site. Teams are to construct a suspension bridge that spans the greatest possible distance and be able to support at least one chalkboard eraser.
    2. Teams will have 20 minutes to construct their bridge. Materials may be altered in any way. A pair of scissors will be provided for use during the construction period but may not be used in the bridge's structure or as an anchor.
    3. The bridge will be suspended on similar supporting structures such as chairs or desks. All teams will have access to the official set of supports to view and measure during the construction period.
    4. Under the direction of event supervisors, students will place one chalkboard eraser at the center and at a right angle (perpendicular) to their bridge. The bridge must support the eraser for 10 seconds to be judged. Bridges failing this test will be disqualified. The eraser will be removed from the bridge before measurement.
    5. No part of the bridge may touch the floor during judging or measurement. The bridge may touch the supporting structure only at its point of support. No additional bridge supports may touch the stationary objects. The bridge may not be attached to the stationary objects with tape or in any other way

10. SCORING:
    The bridge spanning the greatest distance supporting the eraser for 10 seconds will be the winner. In the case of a tie, additional erasers will be added until the strongest bridge is determined

11. EVENT RESOURCES:
    See the Event Resources tab on our website at aub.ie/eso for more information.

Calculator Contest

DESCRIPTION: This is an event for students to demonstrate their knowledge of problem-solving using a hand-held, non-programmable calculator.

ESSENTIAL STANDARDS ALIGNMENT: ALCOS

TEAM OF UP TO: 2

MAXIMUM TIME: 30 min.

RESOURCES NEEDED: Teams will need a writing utensil. All other materials will be provided.

EVENT LEADERS: Must provide calculator and student response sheets for each team.

SAFETY REQUIREMENTS: None

IMPOUND: No

THE COMPETITION:

1. Students will be given a test that will require them to do simple addition, subtraction, multiplication, and division using a simple hand-held calculator.
2. Students will then be given "word problems" that may be solved with this same technology.

SCORING: The test should have at least 10 "simple arithmetic" calculations and at least 10 word problems for students to solve within the time limit.

Ties will be broken with time. Shortest time for the same number of correct solutions will be the winner

EVENT RESOURCES:

See the Event Resources tab on our website at aub.ie/eso for instructions, videos and more. Fourth, Fifth, and Sixth Grade Science and Health Books.

Categories

1. DESCRIPTION: The game consists of three rounds. Each team begins the round with a blank playcard on which they write their names and round number.

2. ESSENTIAL STANDARDS ALIGNMENT: ALCOS

3. TEAM OF UP TO: 3

4. MAXIMUM TIME: 30 min.

5. RESOURCES NEEDED: Teams will need a writing utensil.

6. EVENT LEADERS: Must provide student response sheets for each team for three different rounds. Letter tiles are also needed. Teams will have 6 minutes to complete each card.

7. IMPOUND: No

8. THE COMPETITION: This event will be run in a station/test/lab format.
    1. DRAWING CARDS. A total of six category cards are drawn from the deck by the teacher.
    2. ANNOUCING SUBJECT MATTER. From the card, the teacher selects and announces the category subject matter. As each selection is announced, all players write them in the six category blanks on their playcard. The six used cards are then set aside.
    3. DRAWING LETTER TILES. The teacher draws a total of six letter tiles. Each is announced. All players write them in the Initial Letter column of their playcard. If a wild letter tile (8) is drawn, it is marked accordingly on the playcard.
    4. MAKING ENTRIES. After the timer is set (for 6 minutes), each team of three players attempt to enter a word or phrase in each of the 36 blanks on their playcard. Each entry must agree with or fit the category at the top of that column and its "Key Word" must begin with the letter at the left of the row in which it is written. A specific entry may be written only once on the playcard even though it may be valid in another blank. Teams may converse quietly. Loud discussions will give away good answers to competitors!

       KEY WORDS. Generally, the "Key Word" in an entry is the first word. However, if the first word or title prefix of an entry is par of the category, the next main word is to be regarded as the key word. The articles "a", "an" and "the" are never Key words. Common surnames given only will be disallowed as guesses unless accompanied by appropriate first names.

       Key Words in a row with a wild initial letter (*) may begin with any letter of the alphabet but need not begin with the same letter (see example below). When time is up, each player must stop writing immediately and pass his playcard to the judge, the judge will validate responses at a later time.

    5. This process is repeated three times with different categories. The initial letters, however, may be the same.
    6. Categories should be chosen by the teacher that reflects subject matter discussed during the school year.

7. An example chart is shown below. If only a common surname is given it will be disallowed as a guess unless accompanied by an appropriate first name.

Categories	Mammals	Trees	U.S. rivers	Insects	Units of Measure	Scientists	Body Parts
A	Apes	Aspen	Allegheny	Ant	Amperes		Artery
M	Man	Mangrove	Missouri	Moth	Meter	Mendel	Muscle
F	Fox	Fir		Fish fly		Fermi	Finger
*	Cat	Oak	Mississippi	Beetle	Liter	Einstein	Liver
D	Dog	Dogwood	Detroit	Dragon fly	Decigram	David Smith**	
*	Horse		Snake	Spider**		Watt	heart

9. SCORING: One point will be given for each correct answer.

NOTE: In the example the student will not get credit for blank spaces and a spider is not an insect and David Smith violates rule, direction or first name beginning with a D is incorrect. We need a scientist whose last name begins with a D such as Dirac or Humphrey Davey!

EVENT RESOURCES:

See the Event Resources tab on our website at aub.ie/eso for more information.

2021-22 Possible Categories – we will use 5 categories and 5 letters for a total of 25 blanks on each card.

Famous Scientists
Dinosaurs
Natural Disasters
Land Forms
Rock
Mineral
Elements
Stars
Constellations
Endangered Species
Bones in the human body
Diseases
Part of a Microscope
Units of Measure
Programming Languages
Field of Science
Compounds
Planets
Electricity
Entomology

Crash Landing

1. DESCRIPTION: Teams will design a device using materials provided onsite that will prevent a raw egg from making a crash landing when dropped from a high elevation.

2. ESSENTIAL STANDARDS ALIGNMENT: ALCOS

3. TEAM OF UP TO: 2

4. MAXIMUM TIME: 50 min.

5. RESOURCES NEEDED: None

6. EVENT LEADERS: Must provide student response sheets for each team, building materials, egg.

7. SAFETY REQUIREMENTS: None

8. IMPOUND: No

9. THE COMPETITION:
    1. Teams will be given an equal amount of a variety of household and office supplies such as cotton, paper, straws, cups, clips, tape, pins, etc. No outside materials are permitted.
    2. Each team will have 25 minutes to construct their device which will prevent a large, grade A raw egg from breaking when dropped from a high elevation. Teams are not required to use all of the materials available.
    3. Teams shall design their devices to encase the egg. Devices may be of any shape or size and may make use of a parachute design. The devices may also make use of any adhesive substance provided with their materials to aid it in adhering to the target. No plumb lines will be allowed.
    4. At the end of the preparation time. All devices will be set aside and massed without the egg.
    5. Following the massing of each device, the participants will load a room temperature egg into their device in preparation for the drop.
    6. The device will then be dropped free fall by one student from a height determined by the event supervisor. There will be only one drop with a time limit of three minutes to prepare for the drop from the time the judge days to begin.
    7. The drop area will be approximately 60 cm X 60 cm and make a solid material with a target in the center of the area.

10. SCORING:
    1. Those devices which prevent the egg from breaking or showing any detectable cracks will be scored. A egg is deem to have broken if it wets a paper towel.
    2. Those devices that successfully protect the egg from breaking will be ranked according to their masses. The lightest device will be declared the winner.
    3. All devices that do not successfully protect the egg will receive event participation points only.

11. EVENT RESOURCES:
    See the Event Resources tab on our website at aub.ie/eso for more information.

Deep Blue Sea

1. DESCRIPTION: Teams will demonstrate their understanding of oceanography.

2. ESSENTIAL STANDARDS ALIGNMENT: ALCOS

3. TEAM OF UP TO: 2

4. MAXIMUM TIME: 20 min.

5. RESOURCES NEEDED: Teams will need a writing utensil only.

6. EVENT LEADERS: Must provide student response sheets for each team.

7. SAFETY REQUIREMENTS: None

8. IMPOUND: No

9. THE COMPETITION: This event will be run in a two-part format.
    1. One Part I the contestants will view pictures and/or slides and answer questions relating to identifying members of the following areas:
        1. Ocean flora (algae, kelp, etc.)
        2. Ocean fauna (mammals, mollusks, etc.)
        3. Ocean vessels and equipment used in exploring (diving bells, submersibles, diving gear, etc.)
    2. On Part II the contestants will respond to a series of questions relating to the following topics:
        1. Physical features (trenches, seamounts, etc.)
        2. Phenomena (tidal waves, currents, etc.)
        3. Geography (location and identification of oceans, seas, major bays, etc.)
        4. Vocabulary (relating to any of the above topics)
    3. Each team will be given one test packet and one answer sheet. Team members may consult with each other by writing or whispering. Only one answer for each question will be accepted.
    4. At the end of the testing period the test packet and answer sheets will be collected from those who have not turned in their responses.

10. SCORING: Points will be awarded for the accuracy of responses. The team earning the highest score will be declared the winner. Ties will be broken by two tiebreaker included in the test.

11. EVENT RESOURCES:
    See the Event Resources tab on our website at aub.ie/eso for more information.

Food for Thought and Energy

1. DESCRIPTION: This event is designed to determine a students knowledge of the basic food groups, the food pyramid, and the three basic food types – carbohydrates, proteins and fats; their function in the body; the additives added to enhance the nutritional content of food, to prevent food from spoiling, to improve color or flavor, or the change physical characteristics; and diet analysis.

2. ESSENTIAL STANDARDS ALIGNMENT: ALCOS

3. TEAM OF UP TO: 2

4. MAXIMUM TIME: 60 min.

5. RESOURCES NEEDED: Teams will only need a writing utensil.

6. EVENT LEADERS: Must provide student response sheets for each team.

7. SAFETY REQUIREMENTS: None

8. IMPOUND: No

9. THE COMPETITION: This event will be run in a station/test format.
   Part I
   The contestants will move to 5 different stations and perform various activities such as:
   1. Examination of labels of processed foods to determine Kilocalories.
   2. Examination of packaging and label reading basics.
   3. Identification of a food given the ingredients on the label
   4. Comparison of protein, fats, complex carbohydrates and simple sugar.
   5. Understanding of major vitamins and minerals in human nutrition.
   6. Shown pictures of specimens of food, state the food group to which each belongs, according to USDA food guide pyramid.
   7. Determination of the sugar content of cereals and fast foods (using a graph) or of soft drinks (using a prepared graph and a hydrometer)
   8. Diet analysis, as it relates to serving size and food groups.

   Part II
   The contestants will be given a paper and pencil quiz to determine their knowledge of food groups, nutrients, additives, diet analysis, and nutritional imbalance.

   The students should be familiar with the terns – under nourishment, malnourishment, saturated fat, unsaturated fat, plaque, and cholesterol.

10. SCORING: Highest score wins. Tiebreaker questions will be asked, Part I = 50%, Part II = 50%

11. EVENT RESOURCES:
    See the Event Resources tab on our website at aub.ie/eso for more information.

Grab a Gram

DESCRIPTION: Teams will cooperate to pick up fifty (50) grams of two different sets of material. There will be two rounds using different substances (preferably different densities) in each round.

ESSENTIAL STANDARDS ALIGNMENT: ALCOS

TEAM OF UP TO: 2

MAXIMUM TIME: 60 min.

RESOURCES NEEDED: Teams will need a writing utensil. All other materials will be provided.

EVENT LEADERS: Must provide specimens and student response sheets for each team.

SAFETY REQUIREMENTS: None

IMPOUND: No

THE COMPETITION: Each team member must pick up some of the given material and place it in the provided container for delivery to the judges for massing. This must occur during both rounds of the competition. The material could be sand, paper clips, cereal, packing peanuts, beans, rice, etc.

SCORING:

1. The total mass of the sample (mass of the substance plus the container) from each team becomes its score if the mass is 50 or under. Samples will be massed to the nearest tenth of a gram. Those samples over fifty grams will have the amount over 50 subtracted from 50. The lowest possible score per round is "0", so if a team is more than 50+, they will not have a minus score.
2. The two teams scores will be combined to determine a winner. A perfect score at the end of two rounds would be 100.
3. In the unlikely event of a tie, the team with the best single score could be declared winner.

Sample scores:
Masses between 1-50 equal that number (e.g., 37=37)
Masses over 50 are subtracted from 50, so 62-50=12 and then 50-12=38
Masses over 100 = 0 (as 102 is 52 over 50, which would equal -2, except a negative score is not allowed).

EVENT RESOURCES:
See the Event Resources tab on our website at aub.ie/eso for instructions, videos and more. Fourth, Fifth, and Sixth Grade Science and Health Books.

Grasp A Graph

1. DESCRIPTION: The objective is to develop the skills of collecting and organizing information using pictographs, bar, line and pie graphs to solve problems.

2. ESSENTIAL STANDARDS ALIGNMENT: ALCOS

3. TEAM OF UP TO: 2

4. MAXIMUM TIME: 30 min.

5. RESOURCES NEEDED: Teams will need a writing utensil. All other materials will be provided.

6. EVENT LEADERS: Must provide calculators, rulers and student response sheets for each team.

7. SAFETY REQUIREMENTS: High Impact safety goggles are required

8. IMPOUND: No

9. THE COMPETITION: This event will be run in a test format.
    1. The contestant will be required to analyze several pictographs, bar graphs, line graphs, pie graphs or other representations of data and interpret them.
    2. The contestant will be asked to prepare bar graphs, line graphs, and pie graphs given a set of data. Graph paper will be provided. A simple non-programmable calculate may be used.

10. SCORING: 70% for interpretation of the graphs. 30% for preparation of the graphs.

11. EVENT RESOURCES:
    See the Event Resources tab on our website at aub.ie/eso for more information.

It's Elemental

1. DESCRIPTION: Teams of two students will be quizzed on chemical elements on the periodic table and the general characteristics of the most common elements on Earth

2. ESSENTIAL STANDARDS ALIGNMENT: ALCOS

3. TEAM OF UP TO: 2

4. MAXIMUM TIME: 45 min.

5. RESOURCES NEEDED: Teams will need a writing utensil.

6. EVENT LEADERS: Must provide student response sheets for each team..

7. SAFETY REQUIREMENTS: None

8. IMPOUND: No

9. THE COMPETITION: This event will be run in a test format.
    1. Teams will be asked general questions regarding some of the top 30 most abundant elements in the Earth's crust and their common uses. The 30 elements include: oxygen, Silicon, Aluminum, Iron, Calcium, Sodium, Potassium, Magnesium, Titanium, Hydrogen, Phosphorus, Carbon, Manganese, Sulfur, Barium, Chlorine, Chromium, Fluorine, Zirconium, Nickel, Helium, Lithium, Beryllium, Boron, Nitrogen, Neon, Argon, Scandium, Vanadium, and Cobalt.
    2. Teams will be asked to provide the chemical symbols for specific elements or name an element given its chemical symbol for any element in the periodic table.
    3. Teams will be asked questions regarding the characteristics of groups of elements on the periodic table such as noble gases, etc.
    4. Students will have 45 minutes to complete the written test. Time is not a scoring factor.

10. SCORING:
    The team with the most correct responses will be declared the winner. Ties will be broken with pre-determined tie-breaker questions.

11. EVENT RESOURCES:
    See the Event Resources tab on our website at aub.ie/eso for more information.

Knock, Knock – Who's There?

DESCRIPTION: This event is designed to examine a student's knowledge and awareness of his fellow travelers on the planet earth. Contestants will be asked to identify a variety of naturally occurring evidence that indicates the presence of, the passage of, or the existence of some living organism in the environment.

ESSENTIAL STANDARDS ALIGNMENT: ALCOS

TEAM OF UP TO: 2

MAXIMUM TIME: 45 min.

RESOURCES NEEDED: Teams will need a writing utensil. All other materials will be provided.

EVENT LEADERS: Must provide specimens, writing instruments and student response sheets for each team.

SAFETY REQUIREMENTS: None

IMPOUND: No

THE COMPETITION:

1) The competition may be administered in any of the following formats or combination:
   a) Orally – slides/illustrations may be projected and questions asked. Each question will be stated twice.
   b) Actual examples will be placed on display for identification and/or questions.
2) The majority of questions will require a multiple-choice answer or a short answer. Answer sheets will be provided.

SCORING: Each correct answer will be worth one point. Certain specimens or examples will be designated as tiebreakers. A second tiebreaker would be misspelled terminology

Sample specimens that might be used include:

Animal tracks	Skulls
Animal skins	Fossils
Shed from molting	Predator damage
Cocoons	Plant Damage
Feathers	Sounds
Egg cases	Scat
Animal houses (wasp nest, etc.)	

EVENT RESOURCES:

See the Event Resources tab on our website at aub.ie/eso for instructions, videos and more. Fourth, Fifth, and Sixth Grade Science and Health Books.

Leaf and Tree Finder

1. DESCRIPTION: Two participants will be asked to identify various trees by using an identification key and leaf and tree part samples. Students may bring charts, keys, resource books etc., into the competition.

2. ESSENTIAL STANDARDS ALIGNMENT: ALCOS

3. TEAM OF UP TO: 2

4. MAXIMUM TIME: 20 min.

5. RESOURCES NEEDED: Teams will need a writing utensil.

6. EVENT LEADERS: Must provide student response sheets for each team.

7. SAFETY REQUIREMENTS: None

8. IMPOUND: No

9. THE COMPETITION: This event will be run in a station format.
Each participant will be given a packet, or move through station, that will include objects from trees and several guide sheets to use in the identification of trees. An answer sheet will be given and the student will be asked to identify the trees and answer questions about them.

Sample Questions:

1. Show a picture (or have a real leaf and acorn) ask what tree it came from:
   A) Ash B) Apple C) Oak

2. A common use of the wood from this tree is:
   A) Salad bowls B) two by fours C) wood floors

Sample tree list:

Ash, Black
Ash, White
Aspen, (Largetooth, Bigtooth)
Aspen, Quaking
Basswood
Beech, American
Birch, Paper
Boxelder
Cedar, Northern White (Arborvitae)
Cherry Black
Gingko
Hickory, Shagbark
Honeylocust
Hop-Hornbeam
Locust, Black
Maple, Red
Maple, Silver
Maple, Sugar
Mulberry, Red
Oak, Red
Oak, White
Pine, Scotch
Pine, White
Poplar, White
Sassafras
Spruce, Colorado
Blue Spruce
Sycamore
Tamarack
Tuliptree, (Yellow Popular)
Walnut, Black
Willow, Weeping
Witch-Hazel

3. SCORING: Students will earn points for correctly answered questions. Tiebreaker question will be asked. Points will be deducted for misspelled tree names.

4. EVENT RESOURCES:
   See the Event Resources tab on our website at aub.ie/eso for more information.

Map Reading

1. DESCRIPTION: Individual Contestants will be given two-part questions, which can be answered by using various kinds of maps.

2. ESSENTIAL STANDARDS ALIGNMENT: ALCOS

3. TEAM OF UP TO: 2

4. MAXIMUM TIME: 30 min.

5. RESOURCES NEEDED: Teams will need a writing utensil.

6. EVENT LEADERS: Must provide student response sheets for each team. Event leaders may also provide items such as: rulers, calculators, protractors, meter tapes, meter sticks, balances of any kind, beakers, graduated cylinders, thermometers, objects to measure and various types of graphs to be analyzed.

7. SAFETY REQUIREMENTS: None

8. IMPOUND: No

9. THE COMPETITION: This event will be run in a test format.
    1. Each Contestant will be given a question and answer sheet. Various kinds of maps. Various kinds of maps – such as topographic, political, oceanographic and road maps- will be posted around the room. For each question, the contestant will be asked:
        1. Which is the best map to use in answering the question?
        2. What is the specific answer to the question?
    2. At the end of 30 minutes the question and answer sheet will be collected from those contestants who have not turned in their responses.

    Sample Map List:

1. States Road Map	2. United States Political
3. World Physical	4. Local Weather Map
5. Biomes	6. Oceanographic
7. Local Topo Map	8. USA Weather Map
9. Globe	10. Local Political Map

10. SCORING:
    1. Each of the two responses to each question will be evaluated with equal weight given to each response. The contestant attaining the highest score will be declared the winner.
    2. In the event of a tie, the contestant with most correct responses to the specific question (not type of map) will be declared the winner.
    3. Seconder tiebreaker will be 5 "pre-selected questions".

11. EVENT RESOURCES:
    See the Event Resources tab on our website at aub.ie/eso for more information.

Measurement and Metrics

1. DESCRIPTION:
    1. **Part I:** A team of students are given a measurement and asked to predict what object on the designated tables is equal to that specific measurement.
    2. **Part II:** Students later measure that actual object. They need to arrange their data in a table, which includes the prediction-object, measurement, and the difference of the actual measurement compared to their prediction.

2. ESSENTIAL STANDARDS ALIGNMENT: ALCOS

3. TEAM OF UP TO: 2

4. MAXIMUM TIME: 30 min.

5. RESOURCES NEEDED: Teams will need a writing utensil. All other materials will be provided.

6. EVENT LEADERS: Must provide calculators and student response sheets for each team. Event leaders may also provide items such as: meter sticks, 30 cm rulers, metric tapes, balances, spring scales, graduated cylinder, thermometer, and objects to measure.

7. SAFETY REQUIREMENTS: None

8. IMPOUND: No

9. THE COMPETITION: This event will be run in a station format.

    Part I

    1. For ease in setting up the competition, objects should be placed on two or three large cafeteria type tables.
    2. Students are given several measurements to predict, e.g.
        1. Can you find something on one of the tables that is 30 centimeters long?
        2. Can you find something on one of the tables that is 1 meter long and 20 centimeters wide?
    3. Teams must agree on the chosen object. The predictions are placed in a chart using a red pen. Pens are collected after Part I is completed.

    Part II

    4. Students now pick up the appropriate measuring instrument and measure the selected objects.
    5. The actual measurements are now placed on the chart in black ink.

    Example: Can you find something on the table that is 60 centimeters long?

Object Selected/Predicted	Actual Measurement	Measurement Asked For	Difference in Measurement
2 Floor Tiles	54 cm	60 cm	-6 cm
Length of the pencil	145cm	12 cm	+2.5 cm
Volume of glass	155 ml	175 ml	-20 ml

10. SCORING: Look at the Difference column. Sum those numbers. Lowest score wins. Ties will be broken by the greatest number of zero 0) scores in the Difference column.

11. EVENT RESOURCES:
    See the Event Resources tab on our website at www.aub.ie/scienceolympiad for more information

12. 2021-22 Event Specifics:

Layout

Teams will be seated at tables. Multiple teams from one school will be separated so that no more than one team from a given school is at a table. Each table will have a total of 4 items (two sets of two identical items) placed on the table.

Competition Part 1

The event supervisor will provide a specifically colored pen to each team. When the event supervisor begins the competition, each team will choose one item and will be required to estimate values of length, mass, and volume for the item. The team will have 5 minutes to make and record their estimates on the score sheet provided. The event supervisor will then call time and teams will swap with another team at the table that has the other item. Again, each team will have 5 minutes to make and record their estimates. The event supervisor will then pick up the colored pens but leave the score sheets with the teams.

Competition Part 2

The event supervisor will provide a different specifically colored pen to each team. Each team will choose one item and when the event supervisor starts this portion of the competition, the teams will then measure/calculate certain parameters that have previously estimated. These values will be recorded on the score sheet with the pen provided by the event supervisor. After 7 minutes, the event supervisor will call time and the teams will again swap items. The requested measurements/calculations will then be made for the second time in a 7-minute period. The supervisor will call time and pick up the colored pens and the score sheets.

Scoring

The absolute value of the difference between the estimate for each parameter and the actual value (Estimate Error) will be recorded as a positive value on the score sheet by the grader. The absolute value of the difference between the measured/calculated value of each parameter and the actual value (Measurement Error) will be recorded as a positive value on the score sheet by the grader. The total score will be sum of all Estimate Errors and all Measurement Errors. The lowest score wins. The event supervisor will designate certain questions as tiebreakers but these will not be publicized beforehand.

Pastamobile

1. DESCRIPTION: To construct a vehicle entirely out of glue and pasta that, when released from the top of a ramp, will travel the greatest distance within a 1.5m wide "lane" before stopping.

2. ESSENTIAL STANDARDS ALIGNMENT: ALCOS

3. TEAM OF UP TO: 4

4. MAXIMUM TIME: 60 min.

5. RESOURCES NEEDED: Pastamobile

6. EVENT LEADERS: Must provide student response sheets for each team.

7. SAFETY REQUIREMENTS: None

8. IMPOUND: No

9. PROCEDURE:
    1. Any supermarket variety of fresh (soft) or dry pasta uncooked and unaltered. Samples of the pasta used should be brought in the event of a challenge. Any commercially, available glue is permissible. Only minimal use of glue is allowed. No "sculpting", joint, or gap filling of the glue will be allowed. The pasta may be shaped by filing, sanding, or other dry machining techniques.
    2. The cart must be able to fit into a closed "shoe box" 30cm x 15m x 10cm. There are no mass restrictions. The device must make and maintain contact with the surface on which it rests on at least three points. (Simple spheres, cylinders, etc. will not do)

10. THE COMPETITION:

The racers will be placed on the ramp so that the rearmost part of the racer is in contact with a horizontal barrier at the top of the ramp. It is then released by the contestant (no helpful nudges allowed!). The ramp itself is a curved surface that is, at its highest point, 1m high. The entire ramp must fit in a space that is 1m high x 1m long x 0.5m wide.

11. SCORING:
    1. Presentation of a pastamobile that meets the specifications as outlined above
    2. Its ability to complete the run essentially intact.
    3. The distance that pastamobile is able to travel within the 1.5m lane out from the ramp. Should the pastamobile lose its structural integrity (fall apart) during its run, the distance factor will be determined by the largest surviving structural component.
    4. The highest scores will be awarded to pastamobiles that remain basically intact and travel the greatest distance, followed by those that do not remain intact but do meet all other requirements. If the pastamobile rolls outside of the 1.5m wide lane; its distance will be measured along the edge of the lane to the first point where any part of the pastamobile crossed the boundary line.

12. EVENT RESOURCES:

    See the Event Resources tab on our website at aub.ie/eso for more information.

Rock Hound

DESCRIPTION: Students will identify various rock and mineral specimens and answer questions about the characteristics of these specimens. Prior to the tournament, students may prepare a chart that can be used to help them during the event. Once chart is allowed per team, limited to 8 ½" x 11" in size. Both sides may be used.

ESSENTIAL STANDARDS ALIGNMENT: ALCOS

TEAM OF UP TO: 2

MAXIMUM TIME: 30 min.

RESOURCES NEEDED: Teams will need completed chart and writing instrument.

EVENT LEADERS: Must provide student response sheets for each team. Event leaders may also provide items such as: rulers, calculators, protractors, meter tapes, meter sticks, balances of any kind, beakers, graduated cylinders, thermometers, objects to measure and various types of graphs to be analyzed.

SAFETY REQUIREMENTS: None.

IMPOUND: No

THE COMPETITION:

1. Contestants will be allowed 20 minutes to identify as many rocks and minerals as possible from a selected group to include such rocks as but no necessarily limited to:

ROCKS:	basalt	bituminous coal	conglomerate	gneiss
	granite	limestone (fossil)	marble	obsidian
	pumice	quartzite	sandstone	schist (garnet)
	scoria	shale	slate	
MINERALS:	calcite	copper	feldspar (pink)	fluorite
	galena	graphite	gypsum- satin-spar	kaolinite
	hematite	mica-biotite	pyrite	halite
	quartz (chert)	quartz (crystal)	talc	

2. Contestants will also be asked questions about the rocks or minerals, such as their color, density (relative heaviness per volume), relative hardness, reaction to vinegar, shape, texture, etc.
3. Contestants should bring their completed charts with them to the tournament. The charts may be used in the identification process and to aid in answering any question. Copies of these should be submitted with the answer sheets at the end of the time period.

SCORING: Each rock or mineral identified, and each question answered correctly will count one (1) point. The contestant with the highest total score will be the winner. In case of ties, contestants with the most complete and accurate charts will be the winners.

EVENT RESOURCES:
See the Event Resources tab on our website at aub.ie/eso for more information.

Starry, Starry Night

1. DESCRIPTION: Teams will demonstrate their understanding of astronomy in two parts.

2. ESSENTIAL STANDARDS ALIGNMENT: ALCOS

3. TEAM OF UP TO: 2

4. MAXIMUM TIME: 30 min.

5. RESOURCES NEEDED: Teams will need a writing instrument.

6. EVENT LEADERS: Must provide student response sheets for each team. Event leaders may also provide items such as: rulers, calculators, protractors, meter tapes, meter sticks, balances of any kind, beakers, graduated cylinders, thermometers, objects to measure and various types of graphs to be analyzed.

7. SAFETY REQUIREMENTS: None

8. IMPOUND: No

9. THE COMPETITION: This event will be run in a test format.
    1. Each team will be given one test booklet and one answer sheet. Team members may consult with each other by writing (no talking). Only one answer for each question will be accepted.
    2. At the end of the testing period the test booklet and answer sheets will be collected from those teams who have not turned in their responses.
    3. The contestants will be shown star charts, slides, overheads or photographs of star fields and be asked to identify indicated stars and constellations.
    4. Contestants should prepare for the test by looking through astronomy periodicals or textbooks for picture of the moon, planets, star clusters, nebula, or galaxies.

    Part I: The contestants will identify the following celestial objects:
    1. At least 5 constellations (See attached list of stars and constellations.)
    2. At least 5 stars. (See list.)
    3. At least 3 planets.
    4. The moon and/or any of its phases.
    5. The sun
    6. The totally eclipsed sun.
    7. A spiral galaxy, a nebula, a star cluster and a comet.

    Part II: The contestants will answer a series of written questions about important astronomical facts and concepts:

    1. Distinguish between the motions of rotation and revolution.
    2. State the effects produced by rotation and revolution or the earth.
    3. Demonstrate knowledge about units of time (day, month, and year) and their astronomical basis.
    4. Arrange a group of bodies according to their relative sizes from largest to smallest.
    5. Arrange a group of objects according to their distance from either the sun or the earth.
    6. Demonstrate knowledge about the seasons on the earth and their causes.
    7. Be able to name and identify the phases of the moon and state the factors that produce them.

8. Demonstrate knowledge about the celestial sphere and the following points: zenith, horizon, four directions,
celestial meridian, north celestial pole, and ecliptic.
9. Demonstrate knowledge about the members of the solar system.
10. Demonstrate knowledge about solar and lunar eclipses and the conditions that produce them.

Constellation	Star or Star Cluster
Andromeda	
Bootes	Arcturus
Canis Major	Sirius
Cassiopeia	
Cepheus	
Cygnus	
Draco	
Gemini	Castor, Pollux

Constellation	Star or Star Cluster
Hercules	Kornephoros
Leo	
Orion	Betelgeuse, Rigel
Scorpius	
Taurus	Aldebaran, Pleiades
Ursa Major	
Ursa Minor	Polaris
Virgo	Spica

10. SCORING: All questions will be worth one point. The team with the highest score will be declared the winner. Tie-breaker questions will be included on the test.

11. EVENT RESOURCES:
See the Event Resources tab on our website at aub.ie/eso for instructions, videos and more.

Weather or Not

1. DESCRIPTION: This competition will test the students' knowledge of metrological terms, techniques, and events.

2. ESSENTIAL STANDARDS ALIGNMENT: ALCOS

3. TEAM OF UP TO: 2

4. MAXIMUM TIME: 45 min.

5. RESOURCES NEEDED: Teams will only need a writing instrument.

6. EVENT LEADERS: Must provide student response sheets for each team. Event leaders may also provide items such as: rulers, calculators, protractors, meter tapes, meter sticks, balances of any kind, beakers, graduated cylinders, thermometers, objects to measure and various types of graphs to be analyzed.

7. SAFETY REQUIREMENTS: High Impact safety goggles are required

8. IMPOUND: No

9. THE COMPETITION: This event will be run in a test format.
    1. Student teams will be given a test on basic weather terms and techniques. Material may include cloud charts, graphs, tables, photographs, drawings, or diagrams.
    2. Questions may also include states of water, water cycle, weather terminology, atmosphere, weather instruments and their function, seasonal changes in weather, weather safety and types of severe weather and watches/warnings.
    3. Students may be asked to make readings on a variety of simple scientific weather instruments such as thermometers, barometers, and anemometers.

10. SCORING: The winner will be the team achieving the highest score. Ties will be broken by a pre-selected set of questions.

11. EVENT RESOURCES:
    See the Event Resources tab on our website at aub.ie/eso for more information.