

**2023 NATIONAL SCIENCE OLYMPIAD STANDARDS ALIGNMENT BY EVENT
C DIVISION (MIDDLE SCHOOL; Grades 9-12)**

Event	Standards
ANATOMY AND PHYSIOLOGY – Participants will be assessed on their understanding of the anatomy and physiology for the human Nervous, Sense Organs, and Endocrine systems.	<i>HS-LS 1–2, HS-LS 1–3</i>
ASTRONOMY – Teams will demonstrate an understanding of Variability of Low & Mid-Mass Stars.	<i>HS-ESS 1–2, HS-ESS 1–3</i>
BRIDGE – Teams will design and build a Bridge (Structure) meeting requirement specified in these rules to achieve the highest structural efficiency.	<i>HS-ETS 1-2, HS-ETS 1-3, HS-ETS 1-4</i>
CELL BIOLOGY – This event integrates content knowledge and process skills in the areas of cell biology and cellular biochemistry.	<i>HS-LS 1-1, HS-LS 1-3, HS-LS 1-4, HS-LS 1-5, HS-LS 1-6, HS-LS 1-7, HS-PS 2-6</i>
CHEMISTRY LAB - Teams will complete one or more tasks and answer a series of questions involving the science processes of chemistry focused in the areas of Aqueous Solutions and Oxidation/Reduction.	<i>HS-PS 1–1, HS-PS 1–2, HS-PS 1–3, HS-PS 1–4, HS-PS 1–5, HS-PS 1–6, HS-PS 1–7</i>
CODEBUSTERS – Teams will cryptanalyze and decode encrypted messages using cryptanalysis techniques for historical and modern advance ciphers.	K-12 Computer Science Framework <i>9-12 Computing Systems 9-12 Algorithms and Programming 9-12 Networks and the Internet</i>
DETECTOR BUILDING – Teams will build a durable Mass/Force-sensing Device that will accurately measure and display both voltage and actual masses of different solid samples ranging from 30 to 1,000 grams.	<i>HS-PS 1-3, HS-PS 1-5., HS-PS 3-5., HS-ETS 1-2., HS-ETS 1-3., HS-ETS 1-4.</i>
DISEASE DETECTIVES – Participants will use their investigative skills in the scientific study of disease, injury, health, and disability in populations or groups of people.	<i>HS-LS 1–2, HS-LS 1–3, HS-LS 2-1, HS-LS 2-2, HS-LS 2-6, HS-LS 2-7, HS-LS 2-8, HS-LS 4-3, HS-LS 4-4, HS-LS 4-5, HS-LS 4-6, HS-ETS 1-1, HS-ETS 1-3, HS-ETS 1-4</i>
DYNAMIC PLANET – Students will use process skills to complete tasks related to Earth’s fresh waters.	<i>HS-ESS 2-1, HS-ESS 2-4, HS-ESS 2-5, HS-ESS 2-6, HS-ESS 3-1, HS-ESS 3-4, HS-ESS 3-5, HS-ESS 3-6</i>
ENVIRONMENTAL CHEMISTRY - This event will focus on fresh water (e.g., residential, industrial or natural), The Clean Water Act (1972 & 1977 – certain pages specified at the end), wastewater operator’s certification manual (Indiana March 2018 revision) and its applications, and various testing of particular analytes using standardized curves (either interpreted or created).	<i>HS-PS 1–1, HS-PS 1–2, HS-PS 1–3, HS-PS 1–4, HS-PS 1–5, HS-PS 1–6, HS-PS 1–7, HS-LS 2-1, HS-LS 2-7, HS-LS 4-6, HS-ESS3-4</i>
EXPERIMENTAL DESIGN – This event will determine the participant’s ability to design, conduct, and report the findings of an experiment conducted entirely on site.	<i>HS-PS 1-4, HS-PS 1-5, HS-PS 1-6, HS-PS 2-1, HS-PS 2-3, HS-PS 2-5, HS-PS 3-3, HS-PS 3-4, HS-PS 3-5</i>
FERMI QUESTIONS – Teams provide answers to a series of “Fermi Questions”; science related questions that seek fast, rough estimates of a quantity, which is either difficult or impossible to measure directly.	<i>HS-PS 1-7, HS-PS 1-8, HS-PS 2-1, HS-PS 2-2, HS-PS 2-4, HS-LS 2-1, HS-LS 2-2, HS-LS 2-4, HS-LS 2-5, HS-ESS 1-4, HS-ESS 2-6</i>
FLIGHT – Prior to the tournament teams design, construct, and test free flight rubber-powered aircraft to achieve maximum time aloft.	<i>HS-PS 2-1, HS-PS 3-3, HS-ETS 1-2, HS-ETS 1-3, HS-ETS 1-4</i>
FORENSICS - Given a scenario and some possible suspects, students will perform a series of tests. These tests, along with other evidence or test results, will be used to solve a crime.	<i>HS-PS 1-1, HS-PS 1-3, HS-LS 3-1, LS 3-3, HS-ETS 1-3</i>
FORESTRY – Participants will be assessed on their knowledge of trees found in the United States that are on the 2023 Official Science Olympiad National Tree List.	<i>HS-LS 2-8., HS-LS 4-1., HS-LS 4-2.</i>
GREEN GENERATION – 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.	<i>HS-LS 2-1, HS-LS 2-2, HS-LS 2-7, HS-LS 4-6, HS-ESS 3-3, HS-ESS 3-4, HS-ESS 3-6</i>
IT’S ABOUT TIME - Teams will answer questions related to time and they may construct and bring one non- electrical device to measure time intervals between 10 and 300 seconds.	<i>HS-PS 1-5, HS-PS 2-6, HS-PS 3-5 HS-ETS 1-2, HS ETS 1-3, HS-ETS 1-4</i>
REMOTE SENSING – Participants will use remote sensing imagery, data, and computational process skills to complete tasks related to climate change processes in the Earth system.	<i>HS-PS 4-1, HS-PS 4-2, HS-PS 4-5</i>
ROCKS AND MINERALS – Participants will demonstrate their knowledge of rocks and minerals.	<i>HS-PS 2-6, HS -ESS 1-6, HS-ESS 2-1, HS-ESS 2-3</i>
SCRAMBLER – Teams design, build, and test a mechanical device, which uses the energy from a falling mass to transport an egg along a straight track as quickly as possible and stop as close to the center of a Terminal Barrier (TB) without breaking the egg.	<i>HS-PS 2-2, HS-PS 3-2, HS-ETS 1-2, HS-ETS 1-3, HS-ETS 1-4</i>

**2023 NATIONAL SCIENCE OLYMPIAD STANDARDS ALIGNMENT BY EVENT
C DIVISION (MIDDLE SCHOOL; Grades 9-12)**

<p>TRAJECTORY - 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.</p>	<p><i>HS-PS 2-1, HS-PS 2-6, HS-PS 3-1, HS-PS 3-3, HS-ETS 1-2, HS-ETS 1-3, HS-ETS 1-4</i></p>
<p>WIFI LAB - Teams must construct an antenna device prior to the tournament that is designed to transmit a signal at 2.4 GHz and complete a written test on the principles of electromagnetic wave propagation.</p>	<p><i>HS-PS 2-6, HS-PS 3-5, HS-PS 4-1, HS-PS 4-2, HS-PS 4-5, HS-ETS 1-2, HS-ETS 1-3, HS-ETS 1-4</i></p>
<p>WRITE IT/DO IT – One participant will write a description of an object and how to build it. The other participant will attempt to construct the object from this description.</p>	<p>CCSS ELA Standards <i>W9-10.2, W11-12.2</i> K-12 Computer Science Framework <i>9-12 Algorithms and Programming</i></p>