2022 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.	*HS-LS 1–2, HS-LS 1–3*
ASTRONOMY – Teams will demonstrate an understanding of Variability of Low & Mid-Mass Stars.	*HS-ESS 1–2, HS-ESS 1–3*
BRIDGE – Teams will design and build a Bridge (Structure) meeting requirement specified in these rules to achieve the highest structural efficiency.	*HS-ETS 1-2, HS-ETS 1-3, HS-ETS 1-4*
CELL BIOLOGY – This event integrates content knowledge and process skills in the areas of cell biology and cellular biochemistry.	*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*
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.	*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*
CODEBUSTERS – Teams will cryptanalyze and decode encrypted messages using cryptanalysis techniques for historical and modern advance ciphers.	K-12 Computer Science Framework *9-12 Computing Systems* *9-12 Algorithms and Programming* *9-12 Networks and the Internet*
DETECTOR BUILDING - Teams will build a durable Conductivity Device that will accurately measure and display both voltage and concentrations of NaCl in parts per million (ppm) from 0 to 5000 ppm of different water samples.	*HS-PS 1-3, HS-PS 1-5., HS-PS 3-5., HS-ETS 1-2., HS-ETS 1-3., HS-ETS 1-4.*
DISEASE DETECTIVES – Participants will use their investigative skills in the scientific study of disease, injury, health, and disability in populations or groups of people.	*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*
DYNAMIC PLANET – Students will use process skills to complete tasks related to Earth's fresh waters.	*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*
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).	*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*
EXPERIMENTAL DESIGN – This event will determine the participant's ability to design, conduct, and report the findings of an experiment conducted entirely on site.	*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*
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.	*HS-PS 1-1, HS-PS 1-3, HS-LS 3-1, LS 3-3, HS-ETS 1-3*
GRAVITY VEHICLE - Teams design, build, and test one Vehicle and Ramp that uses the Vehicle's gravitational potential energy as its sole means of propulsion to reach a target as accurately as possible.	*HS-PS 2-2, HS-PS 3-2, HS-ETS 1-2, HS-ETS 1-3, HS-ETS 1-4*
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.	*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*
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.	*HS-PS 1-5, HS-PS 2-6, HS-PS 3-5 HS-ETS 1-2, HS ETS 1-3, HS-ETS 1-4*
ORNITHOLOGY - Participants will be assessed on their knowledge of North American birds.	*HS-LS 2-8., HS-LS 4-1., HS-LS 4-2.*
PING PONG PARACHUTE - Prior to the tournament, teams will design, build, and bring up to two bottle rockets to the tournament to launch a ping pong ball attached to a parachute to stay aloft for the greatest amount of time.	*HS-PS 2-1., HS-PS 2-2., HS-PS 3-1., HS-PS 3-3., HS-ETS 1-2., HS-ETS 1-3., HS-ETS 1-4.*
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.	*HS-PS 4-1, HS-PS 4-2, HS-PS 4-5*
ROCKS AND MINERALS – Participants will demonstrate their knowledge of rocks and minerals.	*HS-PS 2-6, HS -ESS 1-6, HS-ESS 2-1, HS-ESS 2-3*
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.	*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*

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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.	*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*
WRIGHT STUFF - Prior to the tournament teams design, construct, and test free flight rubber-powered monoplanes to achieve maximum time aloft.	*HS-PS 2-1, HS-PS 3-3, HS-ETS 1-2, HS-ETS 1-3, HS-ETS 1-4*
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.	CCSS ELA Standards *W9-10.2, W11-12.2* K-12 Computer Science Framework *9-12 Algorithms and Programming*