2016 NATIONAL SCIENCE OLYMPIAD – NEXT GENERATION SCIENCE STANDARDS ALIGNMENT

C (SENIOR HIGH SCHOOL) DIVISION

C Events	Next Generation Science Standards
Air 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.	Science and Engineering Practices (2-6)
Anatomy and Physiology – Understand the anatomy and physiology of the integumentary, skeletal, and muscular systems.	From Molecules to Organisms: Structures and Processes (HS-LS1–2-3)
Astronomy – Teams will demonstrate an understanding of the basic concepts of mathematics and physics relating to stellar evolution and star formation and exoplanets.	Earth's Place in the Universe (HS-ESS1–2-3)
Bridge Building – Prior to the competition teams design and build a Bridge meeting these requirements to achieve the highest structural efficiency while being tested upon uneven surfaces.	Science and Engineering Practices (2-6)
Cell Biology – This event integrates content knowledge and process skills in the areas of cell biology and cellular biochemistry.	From Molecules to Organisms: Structures and Processes (HS-LS1–2-7)
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 kinetics and gases.	Matter and Its Interactions (HS-PS1–2, 4-5, 7)
Disease Detectives – Students will use their investigative skills in the scientific study of disease, injury, health, and disability in populations or groups of people with a focus on Population Growth.	Earth and Human Activity (HS-ESS3–4) Engineering Design (HS-ETS1–2-3) Science and Engineering Practices (2)
Dynamic Planet—Oceanography – Teams will complete tasks related to physical and geological oceanography.	Earth's Systems (HS-ESS2–1) Science and Engineering Practices (2, 4, 6)
Electric Vehicle – Teams must design, build, and test one vehicle that uses electrical energy as its sole means of propulsion to travel as quickly as possible and stop as close to a target point.	Science and Engineering Practices (2-8)
Experimental Design – This event will determine a team's ability to design, conduct, and report the findings of an experiment actually conducted on site.	Science and Engineering Practices (1-8)
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.	Science and Engineering Practices (2-8)
Fossils – Teams will demonstrate their knowledge of ancient life by completing selected tasks at a series of stations. Emphasis will be on fossil identification and ability to answer questions about classification, habitat, ecologic relationships, behaviors, environmental adaptations and the use of fossils to date and correlate rock units.	Earth's Systems (MS-ESS2–3) Earth's Systems (HS-ESS2–7) Biological Evolution: Unity and Diversity (MS-LS4–1-2)
Game On – This event will determine a team's ability to design and build on an original computer game incorporating the theme provided to them by the supervisor using the program Scratch.	Science and Engineering Practices (2, 5)
Geologic Mapping – Teams will demonstrate understanding in the construction and use of topographic maps, geologic maps, and cross sections, and their use in forming interpretations regarding subsurface structures and geohazard risks.	Earth's Systems (HS-ESS2–1) Science and Engineering Practices (2)
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.	Ecosystems: Interactions, Energy, and Dynamics (HS-LS2–1-8) Earth and Human Activity (HS-ESS3–4)
Hydrogeology – Students will manipulate a groundwater computer model, answer questions about groundwater concepts, and evaluate solutions, based on hydrogeological evidence, to reduce anthropogenic effects on groundwater.	Earth and Human Activity (HS-ESS3–4, 6) Science and Engineering Practices (2, 5-6, 8)
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.	Science and Engineering Practices (2-8)
Invasive Species – This event will test student knowledge of invasive species in local and national ecosystems.	Biological Evolution: Unity and Diversity (HS-LS4–2) Earth and Human Activity (MS-ESS3–3)

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Protein Modeling – Students will use computer visualization and online resources to guide the construction of physical models of proteins and to understand how protein structure determines function. Students will model proteins involved in the biosynthesis of the neurotransmitters dopamine and serotonin, and in the subsequent signaling by these neurotransmitters as they bind to receptor proteins on post-synaptic cells. Students will also learn about a rare genetic condition resulting from a deficiency in dopamine synthesis.	From Molecules to Organisms: Structures and Processes (HS-LS1–1, 6) Science and Engineering Practices (2)
Robot Arm – Prior to the competition, teams must design, build, document, and test one robotic device to move Scorable Items.	Science and Engineering Practices (2-8)
Wind Power – Teams will build a blade assembly that consists of any kind of propeller/pinwheel/rotor attached to a compact disc (CD), which will be used to capture wind power. Students will also be tested on their knowledge regarding alternative energy.	Science and Engineering Practices (2-8)
Wright Stuff – Prior to the tournament teams design, construct, and test free flight rubber-powered monoplanes to achieve maximum time aloft.	Science and Engineering Practices (2-6)
Write It/Do It – One student will write a description of an object and how to build it, and then the other student will attempt to construct the object from this description.	Science and Engineering Practices (2, 5-8)