

## **Science Olympiad B Event Short Descriptions**

### **(Grades 6 – 9 ) \*ISU Pocatello April 10, 2027 / BSU Boise April 17, 2027**

**ANATOMY & PHYSIOLOGY:** = Participants will be assessed on their understanding of the anatomy and physiology for the respiratory, digestive and immune systems of the human body.

**BOOMILEVER:** = Teams will build to specifications a cantilevered beam or truss structure that extends from a vertical Testing Wall and supports a load at a specified height and distance from the Testing Wall.

**BOTANY:** = Participants will demonstrate their knowledge of plant life and general botany principles.

**CIRCUIT LAB:** = Participants will do hands-on tasks and answer questions about electricity and electronics.

**CODEBUSTERS:** = Participants will cryptanalyze and decode encrypted messages using cryptanalysis techniques for historical and modern advanced ciphers.

**CRIME BUSTERS:** - Given a scenario, a collection of evidence, and possible suspects, students will perform a series of tests. Test results along with other evidence will be used to solve a crime and answer questions.

**DISEASE DETECTIVES:** = Participants will use their investigative skills in the scientific study of disease, injury, health, and disability in populations or groups of people.

**DYNAMIC PLANET:** = Teams will do tasks related to the properties and processes of Earth's fresh waters.

**ELASTIC LAUNCHED GLIDER:** - Prior to the tournament, teams will construct, collect data on test flights, analyze and optimize free flight Elastic Launched Gliders to achieve maximum time aloft.

**EXPERIMENTAL DESIGN:** = Participants will design, conduct, and report the findings of an experiment.

**FOOD SCIENCE:** - Teams will study the science behind milk products and experiment with ingredients and other variables to produce and analyze results to produce the best dairy products below.

**HEREDITY:** - Teams will answer questions, solve problems, and analyze data pertaining to genetics.

**HOVERCRAFT:** = Prior to the competition, participants will design, construct, and calibrate a self-propelled, air-levitated vehicle to carry nickels down a track.

**METEOROLOGY:** - Participants will use scientific process skills involving qualitative and quantitative analyses to demonstrate an understanding of the characteristics of severe weather, including the factors that contribute to, cause and influence Severe Weather & Storms on the Earth.

**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 the longest time.

**REMOTE SENSING:** - Participants will demonstrate an understanding of the basic principles of remote sensing and interpret imagery, data, and maps related to Earth observation.

**ROCKS AND MINERALS:** = Teams will identify and classify rocks and minerals and demonstrate knowledge of how rocks and minerals help to understand geologic processes, interpretation of earth's history, the development of natural resources, and use by society.

**ROLLER COASTER:** - Prior to the competition, teams design, build, and test a Roller Coaster track to guide a ball/sphere that uses gravity as its means of propulsion to travel as close as possible to a Target Time.

**SCRAMBLER:** - Teams design, build, and test a mechanical device, which uses the energy from a falling mass to transport an egg along a track as quickly as possible to a Terminal Barrier (TB) without breaking the egg.

**SOLAR SYSTEM:** - Participants will show their knowledge of habitability in and beyond the Solar System.

**THERMODYNAMICS:** = Teams will construct a device prior to the tournament designed to collect heat and complete a written test on thermodynamic concepts.

**WATER QUALITY:** = Participants will show their understanding and evaluation of marine environments.

**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.

## Science Olympiad C Event Short Descriptions (Grades 9 – 12 ) BSU Boise April 17, 2027

**ANATOMY & PHYSIOLOGY:** = Participants will be assessed on their understanding of the anatomy and physiology for the respiratory, digestive and immune systems of the human body.

**ASTRONOMY:** - Teams will demonstrate an understanding of stellar evolution in normal & starburst galaxies.

**BOOMILEVER:** = Teams will build to specifications a cantilevered beam or truss structure that extends from a vertical Testing Wall and supports a load at a specified height and distance from the Testing Wall.

**BOTANY:** = Participants will demonstrate their knowledge of plant life and general botany principles.

**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.

**CIRCUIT LAB:** = Participants will do hands-on tasks and answer questions about electricity and electronics.

**CODEBUSTERS:** = Participants will cryptanalyze and decode encrypted messages using cryptanalysis techniques for historical and modern advanced ciphers.

**DESIGNER GENES:** - Teams will answer questions, solve problems, and analyze data pertaining to genetics.

**DISEASE DETECTIVES:** = Participants will use their investigative skills in the scientific study of disease, injury, health, and disability in populations or groups of people.

**DYNAMIC PLANET:** = Teams will do tasks related to the properties and processes of Earth's fresh waters.

**ELECTRIC VEHICLE:** - Teams design, build, and test one vehicle that uses electrical energy to travel in a set amount of time, push a bottle past a line, and move backwards to stop close to a Target Point.

**ENGINEERING CAD:** - Teams will read a set of engineering drawings and collaborate to CAD parts in Onshape and then incorporate these parts with provided components to create an assembly.

**EXPERIMENTAL DESIGN:** = Participants will design, conduct, and report the findings of an experiment.

**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.

**HOVERCRAFT:** = Prior to the competition, participants will design, construct, and calibrate a self-propelled, air-levitated vehicle to carry nickels down a track.

**MISSION POSSIBLE:** - Prior to the competition, competitors will design, build, test, and document a Rube Goldberg®-like device that begins with a specific Start Action and ends with a specific Final Action with an optional series of specific actions between the Start and Final Actions.

**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 the longest time.

**PROTEIN MODELING:** - Participants will be assessed on a written exam and prior to the competition will use computer visualization and online resources to construct a physical model of the sialic acid binding site of the 2009 H1N1 influenza hemagglutinin protein.

**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.

**ROCKS AND MINERALS:** = Teams will identify and classify rocks and minerals and demonstrate knowledge of how rocks and minerals help to understand geologic processes, interpretation of earth's history, the development of natural resources, and use by society.

**THERMODYNAMICS:** = Teams will construct a device prior to the tournament designed to collect heat and complete a written test on thermodynamic concepts.

**WATER QUALITY:** = Participants will show their understanding and evaluation of marine environments.

**WRIGHT STUFF:** - Prior to the tournament, teams will construct, collect data on test flights, analyze and optimize free flight rubber-powered Airplanes to achieve maximum time aloft.