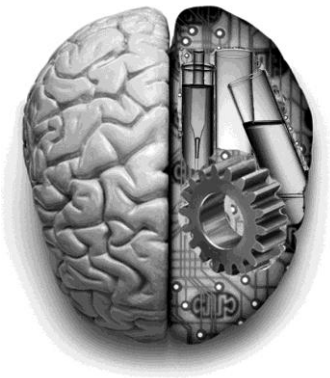

FAIRMONT STATE UNIVERSITY™

College of Science and Technology Engineering and Science Challenge

Finding and Returning the Lost Probe: A probe has gone missing in a dark cave, and it is your team's job to find and return the probe. During this mission, teams will be controlling the robot from a distance, with the only visual aid being provided via a camera mounted to the robot. Each team will be required to navigate the hazardous terrain using only what they can view remotely and limited controls of the telepresence robot. (Technology Department)

Chemistry to Dye For: Teams will be assigned a different color dye and different fabrics. Teams must then determine which fabrics will dye the best based on molecule polarities. (Biology, Chemistry, and Geoscience Department)

Mission Search and Recover: A contract employee has been overcome by breathing nitrogen in a dark confined space. Within the confined space are obstacles and reduced visibility. Employees must enter the confined space with the proper equipment to rescue the employee without endangering others. (Technology Department)

Thinking Outside the Box: (Requires two time slots.) People design transportation systems using available resources to efficiently meet needs and solve problems. Team members will design, produce, test, and analyze a fixed-route transportation system that will move freight efficiently between two points on a suspended guide way path. (Technology Department)

Shoot the Hoops: (Requires two time slots.) Many people would love to play basketball like a superstar. Athletes are able to place the ball through the hoop by a combination of force and projectile motion. In this activity, students will fire a ball to determine the ball's launch speed for two different settings. Computer visualization will be used to determine the optimum settings for launching the ball through a hoop at different heights and distances. (Computer Science, Mathematics, and Physics Department)

The Flu and You: How Do Epidemics Spread?: Epidemiology is the study of factors which affect the origin, spread, and containment of disease in a population. In 2009, a novel form of the flu (known as H1N1 or the swine flu) emerged, and by July 2009 the spread of H1N1 was declared pandemic by the Centers for Disease Control (CDC). In this activity, students will mimic the spread of an infectious disease and then determine which student was "Patient Zero." Students will then brainstorm containment methods to prevent the further spread of this "epidemic". (Biology, Chemistry, and Geoscience Department)

Three-Eyed Robot: Calibrate a three-eyed laser pointer controlled robot. The team that calibrates the eyes and leads it out the door first wins. (Technology Department)

The Load Zone: A new hospital is being constructed with a flat roof design. The roof structure must be designed to accommodate a variety of future needs. These include a future recreational complex (running track and swimming pool) and a future heliport. In addition, the roof structure must support air conditioning equipment

and fire suppression devices. Students will be required to design a roof structure to hold the maximum amount of weight at the lowest possible cost. (Technology Department)

Build Your Own Digestive System: Using the (somewhat random) building materials supplied by the instructor, students will build a functional digestive system—and then test its efficiency by sending a taco through the entire system and measuring the weight loss of the taco from beginning to end. The winner of the challenge will be the group whose taco loses the greatest percentage of its original weight. Machine-washable clothing is recommended for this activity. (Biology, Chemistry, and Geoscience Department)

All Tucker-ed Out: Teams must use scientific observation to create logical inferences about a trackway belonging to Tucker, a prehistoric critter that lived in West Virginia roughly 300 million years ago. Accurately measuring the trackway and using formulas provided, teams must calculate Tucker's size, stride, and height and provide a description of Tucker and his paleo-surroundings to the best of your ability. (Biology, Chemistry and Geoscience Department)

Novel Web Designs for MySpace: For this competition, students will be given a set of guidelines to create a new MySpace page from scratch. The guidelines will involve spacing, sizing, and location of segments on the page. Each team will then develop the necessary HTML and other coding to create backgrounds and layout. Teams will be allowed to bring their own content into the lab on a removable media. (Computer Science, Mathematics, and Physics Department)

Critter Jeopardy: The Fairmont State biology program maintains several live exhibits for both educational and display purposes. In Critter Jeopardy!, student teams will compete to answer questions in six Critter Categories—all of which (except the final category) will be represented by live animals. Categories include Spiders and Insects, Reptiles, Small Mammals, Fish, Carnivorous Plants, and Extinct Critters. (Biology, Chemistry, and Geoscience Department)

The Splat: The proper packaging of products is essential in the retail market. Packaging protects the product from spillage and damage that can cause a loss of profit. Teams will construct a protective enclosure to protect some fragile cargo that will be slammed into a target. (Technology Department)

Visual Basic Programming: (Requires two time slots.) ***For this competition, it is assumed team members have a working knowledge of Visual Basic prior to arrival.*** Teams will be given a problem for which they must develop a solution in the VB programming language. Computers with Microsoft Visual Basic will be provided. There will be a limited number of teams allowed in this competition. (Computer Science, Mathematics, and Physics Department)

Math Trivial Pursuit: In this unique activity, team members will physically move around a board by correctly answering math trivia questions. Questions will be divided into six categories. These categories are: Geometry and Trigonometry, Numbers and Operation, Data Analysis and Probability, Algebra, Measurement, and a Wild Card. (Computer Science, Mathematics, and Physics Department)

Graphics Design: Students will be given the chance to redesign the common fast food burger container! The task given to teams will be to create a second use for the container after the burger has been eaten. (Technology Department)

Geocaching Science: (Requires two time slots.) Using a GPS, participants in teams of two will find several geocached activities ranging from geology to botany that will require them to hypothesize, measure, identify, and interpret data. This activity will take you to the far flung reaches of campus at Fairmont State University to learn things about your environment and yourself. (Biology, Chemistry, and Geoscience Department)

Privacy and Freedom of Speech in Social Computing: Social computing is a growing trend in our current culture, where software systems support any form of social behavior. With this rise has come a new set of corresponding social problems. Groups will be given a case study involving an ethical issue in the areas of free speech or privacy. Groups will then develop a set of arguments supporting the side they take regarding the case study. Each team will present at the end of the session. (Computer Science, Mathematics, and Physics Department)

Whodunit: Teams will compete to solve a whodunit forensic science mystery. Students will process evidence found at the crime scene (such as unknown powders, blood, and thread) in order to figure out which suspect was the likely culprit. (Biology, Chemistry, and Geoscience Department)