

FLITE Project Descriptions

Biotechnology – students will extract DNA, learn how PCR expands the amount of DNA available for analysis, perform gene transformations on bacteria to make the bacteria glow using bioluminescent genes from other organisms as well as explore antibiotic resistance in bacteria. Finally, students will examine the genomes of non-pathogenic viruses.

Computer game design –students will use RoboCode and Java script to design and program their own computer game which will create a virtual robot to compete against other students in the workshop.

Sports Medicine – students will work at a local Colorado Springs sports training facility to work alongside scientists, trainers, and physical therapists on a variety of human performance measurements. In addition, students will engage in answering a scientific question by gathering data related to human performance.

Robotics/Electronics – students will combine electrical engineering and mechanical engineering principles to build a working robot that they will then alter and enhance using electronics, mechanics, and computer programming. Students will then compete in a Sumo-bot competition at the end of the week.

Physics and Filmmaking – students will combine artistry, technology, and science to create their own movie trailer using digital effects, cameras, and lighting. Students will learn how to set up shots, edit footage, apply special effects, and produce high quality digital films. In addition, the physics of filmmaking will be explored through how 3D films are made, how sound and light are used in filming, and how special effects are created. Students will present their film trailers at the end of the week.

Alternative Energy – students will conduct real scientific research on hydrogen fuel production, biodiesel production, and the physics of wind energy. Students will combine their interests in chemistry, physics, biology, and engineering to design, test, and gather data on the various sources of alternative energy. Student data will be shared with other research teams around the country. Continuing research opportunities will be available during the school year with university mentors depending on student interest.