Gains in the Education of Mathematics and Science (GEMS) is an extracurricular science education program that enables students to experience science in a real laboratory setting during the summer.

Highlights

Basic Eligibility Requirements

- U.S. Citizenship
- Students age 10 and over will be considered for participation (entering grades 5 through 11 in fall 2013).

Goal

- To broaden students' interest in science, technology, engineering, and mathematics and to inspire them to consider careers in these fields.

Length of Program

- Program hours are weekdays from 8:30 AM until approximately 3:00 PM daily for a period of 4 days.

Curriculum

- The program is based on a multidisciplinary educational curriculum and focused on age- and grade-appropriate hands-on activities in areas such as science, engineering, robotics, mathematics, computational sciences, microbiology, biomedical sciences, chemistry, and biology.

Leadership

- GEMS Program Administrator
- Certified Teacher
- Near-Peer Mentors (college students)

How to Apply

- Applications for the USAMRIID GEMS programs at Frederick and Hagerstown are accepted beginning in February.
- Apply online at ***http://www.usaeop.com/***.

2013 Program Dates

June 17–20
June 24–27
July 1–5 (excluding July 4)
July 15–18
July 29–August 1
August 5–8

For Additional Information Contact:

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U.S. Army Medical Research Institute of Infectious Diseases

GEMS

Gains in the Education of Mathematics and Science

The curriculum intellectually and creatively challenges students who participate in GEMS. The program is designed for 5th through 11th graders with six different areas of study: Environmental, CSI, Intermediate, Advanced, Battlebots, and Robotics.

Beginning GEMS 1 Environmental

Student interns will become defenders of the environment as they use and make alternative sources of energy, discover how sensitive organisms are to their environments, conduct water quality and soil tests, and learn about renewable and nonrenewable resources.

Beginning GEMS 2 CSI

Student interns will be detectives using blood typing, fingerprinting, lie detectors, bone identification, and DNA to solve a crime.

Intermediate

Student interns will be exposed to several molecular biology techniques currently used in modern laboratories. Among the many activities, they will have the opportunity to manipulate the genetic component of common bacteria to make it glow. Student interns will also explore food science and simple machines.

Advanced

Student interns will be challenged to isolate genomic DNA, use PCR techniques to amplify two specific genes, and then digest those PCR products with restriction enzymes. In addition, they will explore anatomy by dissection and participate in team engineering challenges.

Battlebots

Student interns who participate in Battlebots will build and drive LEGO® remote-controlled robots and learn about gears, torque, and motors. They will be challenged to complete the dreaded obstacle course and beat a fellow classmate in a good old fashion tug of war bot style. Their final challenge is to battle another bot in the GEMS arena.

Robotics

In robotics, student interns take all they have learned in Battlebots and apply it to programming a bot that can use touch and light sensors to maneuver and conquer different tasks. They will be tasked to program a bot that can follow a line, perform a search and rescue task, and pull the most amount of weight.

Other GEMS Locations

WRAIR – Silver Spring, MD
USAISR – San Antonio, TX
USAARL – Fort Rucker, AL
USARIEM – Natick, MA
USAMRICD – APG, MD
USAMRIID – Fort Detrick, MD