NEAR PEER MENTORS

Near Peer Mentors work collaboratively with resource teachers, USAMRDC scientists, and engineers to provide instruction and to engage with students in inquiry-based, hands-on lab activities. Applicants must be U.S. citizens and currently enrolled in college. High school Juniors or Seniors may apply with leadership and hands-on biomedical or coding experience. Prior to the scheduled day camps, Near Peer Mentors will receive training and collaborate with the primary instructors. During the day camp, Near Peer Mentors will interact with middle and high school participants full time by assisting and/or leading experiments/challenges to include: laboratory experiments, coding (block and Python), engineering, and robotics. Near Peer Mentors recieve a competitive stipend based on completed semester hours as well as experience.

WHY GEMS?

GEMS provides hands on STEM laboratory experience to students that may not have access in a typical school setting. Seventy percent of GEMS students indicate greater interest in earning a STEM degree after completing a week of GEMS. Seventy-one percent of students report learning how to work creatively with others and how to turn their creative ideas into something tangible.

All GEMS participants recieve a stipend after successfully completing their GEMS internship.

SPONSERED BY

Army Educational Outreach Programs

US Army Medical Research and Development Command

CONTACT DETAILS

stem.amedd.army.mil
301-619-7942

GAINS IN THE EDUCATION OF MATHEMATICS AND SCIENCE

GEMS

STEM EXPERIENCES FOR STUDENTS IN GRADES 4-COLLEGE

CLASSES

	GRADE
ENVIRONMENTAL	4-5
ENGINEERING & COMPUTER SCIENCE LEVEL 1	5-7
CSI	6-7
ENGINEERING & COMPUTER SCIENCE LEVEL 2	6-8
INTERMEDIATE	7-9
ENGINEERING & COMPUTER SCIENCE LEVEL 3	8-10
*ENGINEERING & COMPUTER SCIENCE LEVEL 4	8-10
ADVANCED	9-12
*ENGINEERING & COMPUTER SCIENCE LEVEL 5	9-12

* Indicates that students must take a previous engineering and computer science class to qualify

CLASS DESCRIPTIONS

GEMS Life Science and Environmental Classes highlight USAMRDC's strengths and expertise in a multitude of areas. The content is hands-on and age appropriate to build real life STEM skills.

ENVIRONMENTAL

- **Students in grades 4 through 5**

Students dissect a squid and write their names with the ink sac. In addition, students learn about pollution, build a water filter, protect a city by building dams, build a solar oven, and watch how chemicals effect vinegar eels.

CRIME SCENE INVESTIGATIONS(CSI)

- **Students in grades 6 through 7**

Students solve a mystery by analyzing fingerprints, hair and fiber, blood typing, and DNA left behind at the scene.

INTERMEDIATE

- **Students in grades 7 through 9**

Students study the presence of Wolbachia in insects by collecting them, dissecting them, and analyzing their DNA with molecular biology techniques. In addition, students also build and launch a rocket.

ADVANCED

- **Students in grades 9 through 12**

Students dissect a fetal pig and learn suturing techniques as well as perform orthopedic surgery. Students also analyze their own DNA, via cheek cells, to see if they are carriers of the PTC gene (bitter taste).

CLASS DESCRIPTIONS

GEMS Engineering & Computer Science (ECE) Classes build on each other, allowing the students to progressively tackle more difficult content each summer.

ECE LEVEL 1

- **Students in grades 5 through 7**

Students work in small teams to "train" and build their robot to complete a robot boot camp. Students' robots will complete a ruck march, obstacle course, hand to hand combat, and even survive an airplane drop.

ECE LEVEL 2 (OFFERED VIRTUALLY)

- **Students in grades 6 through 8**

Students study and use block based coding to animate various characters called sprites, make a digital music band as well as side scrolling, surfer and launcher games.

ECE LEVEL 3

- **Students in grades 8 through 10**

Students again train a robot to autonomously complete various Army inspired tasks through coding, such as an obstacle course, rescue mission, and bomb removal.

ECE LEVEL 4 *

- **Students in grades 8 through 10**

Students use a mix of block coding and Python to program their drone to fly, do surveillance, and complete an air/ light show.

ECE LEVEL 5 *

- **Students in grades 9 through 12**

Students use Python, text based coding, to program an AI vehicle, ZUMI, to complete various tasks around a city.