



## **nCASE Training Module Description**

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The Mathematics with Robots modules are extremely relevant to today's high-tech world. nCASE has always maintained a strong commitment to mathematics, and these modules are used to support inquiry and design processes during nCASE's professional development program for STEM teachers. During these exciting modules, the nCASE lead instructor guides participants as they investigate mathematics using a cutting-edge training curriculum.

### **Mathematics with Robots I (MWRI) – Middle School (Algebra 1 Prepared):**

Robotics is proving to be an effective tool in STEM education. Nationally, students are responding with tremendous enthusiasm for programs utilizing the technology. nCASE lead mathematics instructors have developed an exciting mathematics program utilizing Lego Robotics as a primary (not only) component for classroom use. Participants learn to integrate robotics with mathematics while performing a variety of intriguing hands-on activities to accomplish the following objectives: use self-discovery techniques; compare and contrast attributes of different wheels and gears; program, collect and analyze data; and synthesize their knowledge in a design challenge activity.

### **Mathematics with Robots II (MWRII) – Middle School (Algebra 1 Prepared):**

Participants who have completed Math with Robots I are eligible to continue work with this module. Newly developed units use the Lego Robots and NXT 2.0 programming software as the primary (not only) components for classroom use. Participants learn to integrate robotics with mathematics while performing a variety of intriguing hands-on activities to accomplish the following objectives: use self-discovery techniques; compare and contrast attributes of different position and time graphs; program, collect and analyze data; and compare and contrast attributes of compound gears.

During the final projects for either level, participants have to write a program that allows the robots to complete a challenge course utilizing the knowledge and skills acquired during the module activities.

Each trained teacher will receive a module (valued at approximately \$800) with two Lego robots, a resource kit, a license, e-book laboratory activities, and the supplies to replicate the mathematics activities in their classrooms.

When possible, participants have the unique opportunity to interact and network with experienced DoD scientists and engineers.