

Integrating Java Robotics into Your Curriculum

Human Interface and Input/Output

A two line display, two programmable push buttons, a variable input thumbwheel, a buzzer and a TV remote control receiver will enable your students to develop user interfaces to interact with their robots.

Open-ended Projects

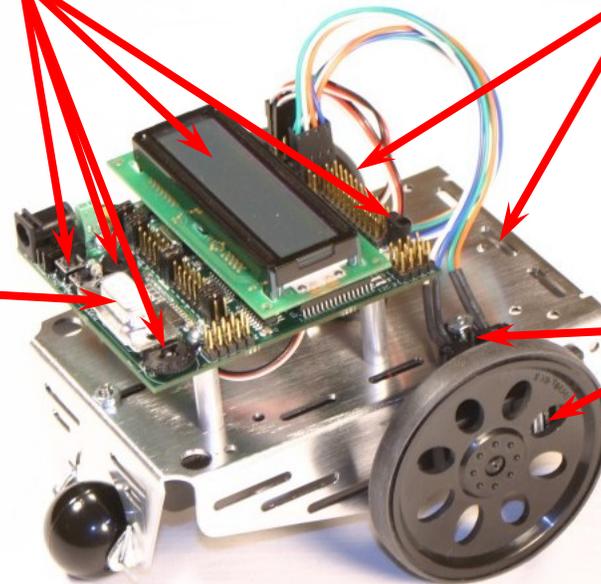
With ports for more than twenty sensors and effectors, plenty of memory and computing power, and available mounting space, your students can engage in open-ended exploration and creativity. Adding sensors such as the CMUcam vision sensor, sonar sensors, infrared range sensors, line sensors, light sensors and many more students can create their own unique robot.

Compiling and Running Programs

With the RoboJDE™ Java™-enabled robotics software development environment, your students will learn the software development process using an integrated development environment on a host PC, which connects to the robot via a serial port. They will develop programs in a modern and relevant language, Java, the AP Computer Science standard.

Classes and Objects

Motors and sensors provide natural real-world objects that make it easier for students to grasp abstract computer science concepts. Using many pre-built classes in the RoboJDE class library, it's easy to apply an objects-first or objects-early approach to teaching object-oriented programming.



Programming Fundamentals

Robotics provides numerous opportunities to engage your students in hands-on learning of programming fundamentals such as variables, conditional statements, iteration, arithmetic calculations and procedures/methods. With robotics, your students can start out with simple and fun programming exercises such as making the robot go forward or rotate in place, then proceed to applying successively more sophisticated programming constructs to make the robot perform more advanced tasks. This allows the robot to be a long lasting learning tool you can use for many valuable exercises.

Why Robotics?

Robotics will inspire your students' interest in computer science and engineering. This technology engages them in applying and expanding their mathematics and science knowledge to solve real-world problems. Fundamental robotics problems such as navigation will allow students to apply geometry, trigonometry and even calculus concepts. Sensing technologies, such as sonar, infrared sensing, magnetic sensing, photo-sensing, and vision sensing, provide an abundance of applications of physics. Behavior-based control algorithms apply life sciences by modeling animal behavior mechanisms as a foundation for robot behavior.