

LEGO NXT Mindstorms Syllabus

Goal: Design and control a LEGO robot to accomplish a variety of tasks and challenges using NXT computer programming language.

Requirements:

Programming: Each team will need to program their DomaBot robot to accomplish the following 10 tasks. After a group has demonstrated mastery of the 10 tasks they may move onto a special project(s) of their choice. Each member of the team will receive the same grade for their group's progress in accomplishing the programming tasks.

10 Tasks

1. Figure 8 - Basic movement and steering of LEGO robot
2. How far? - Test the robot for distance characteristics
3. How fast? - Test the robot for speed and velocity characteristics
4. Personality test - Use of Sound and Display Blocks to give robot personality.
5. How many sides? - Robot draws out various geometric shapes with a pen.
6. Help! I'm stuck - Use of Bump sensor to navigate how to get out of a maze.
7. Help! I'm still stuck - Use of Ultrasonic sensor to navigate how to get out of a maze.
8. Stay away from the edge - Use of Light sensor to remain on table.
9. Did you hear that? - Use of Sound sensor to react to noise.
10. Dancing Robots- Program your robot to perform their dance routine.

Special Projects

Mini-Golf - Build and program a robot to play a round of mini-golf.

Robot Wave - Create your own robotic supporters for the local sporting match.

Robotic Trombone - Create your own trombone using the Ultrasonic sensor.

Robotic Xylophone - Play a xylophone using your robot motors.

Robotic Trumpet - Create your own trumpet using Touch sensors.

Robot Soccer- Program robots to compete in a modified soccer match.

Blogging: Each robotics team will be responsible for keeping a weekly blog about what they are working on in regards to their LEGO robot. Specifics about what to blog about each week will be given at the beginning of the week. Each member of the team will receive the same grade for their group's weekly blog post.

Grading:

20% Science Fair Project

30% Successful Accomplishment of 10 LEGO Tasks

50% Weekly Blog Posts (Total of 10 Posts)