

## Design Challenge 6: Tic-Toc-Toe!



### 1 Goal

The goal of this design challenge is to play a game of tic-tac-toe with your robots. You win if you get three r-ones in a row. You will be put into teams of four, trying to keep the teams evenly matched in programming skill. The team who succeeds in placing three robots in a horizontal, vertical, or diagonal line wins the game. The groups will go head to head until an overall three r-one in a row champion is declared at the end of class.

### 2 The Game Rules:

- A coin flip will determine which team goes first.
- The starting team will be Red (opposing team will be Blue).
- A red cup will be placed in the center tile. This is the red team's first turn.
- Beginning with Blue, the teams will alternate turns to send their robot from a start position to a desired position inside a square.
- The robot must be programmed to move to a goal square through a series of button presses.
- All robots on a team must run the same code and be programmed before the match begins.
- The team will lose a turn if your robot does not stop in one of the 9 square positions, or if it contacts anything during its turn. It will be removed until the next turn.
- Teams that complete the game without losing a turn will get bonus points.

### 3 Points and Turns:

- Winning a game (3pts)
- Not losing any turns in a game (regardless of outcome) (2pts)
- Participating in any game (1pts)

### Hints:

- Use a combination of button presses to select a waypoint (or waypoint list) to move to a certain location on the course.
- You can move any pattern through the course (or outside the course) but avoid paths that could involve other player robots.
- Find midway waypoints that works for multiple tic tac toe squares.
- Avoid excessive motion and turning to achieve the waypoints.