

FIRST® Tech Challenge Game



FIRST® RES-QSM is played on a 12 ft. x 12 ft. square field with approximately 1 ft. high walls and a soft foam mat floor. Mountains consisting of alliance-specific climbing areas and goals are located in two corners of the playing field. Alliance-designated Zip Lines extend from the top of the Mountains to the playing field wall.

Two alliance-specific Rescue Beacons in need of “repair” by autonomous robots are located on the playing field perimeter wall. Scoring elements are 14 Climber figurines and 80 Debris

in the shape of blocks and spheres. At the start of a match, Debris are randomly located throughout the playing field floor. Each team starts with up to two Climbers that can be pre-loaded onto their robot.

Two randomly selected teams are paired together as an alliance to play one match against a second alliance. Alliances are designated as either “red” or “blue.”

Matches have two distinct periods of play: a 30-second Autonomous period followed by a two-minute Driver-Controlled period, which includes a 30-second End Game.

AUTONOMOUS PERIOD

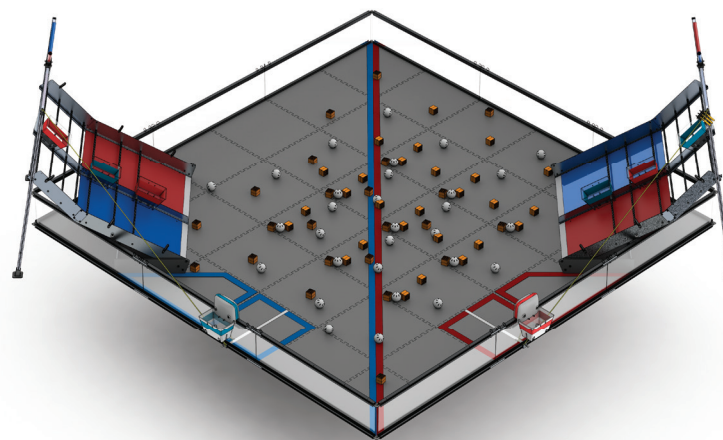
The game starts with a 30-second Autonomous period, where robots are operated via pre-programmed instructions only. Robots gain points by: “resetting” Rescue Beacons, delivering Climbers to a Shelter, parking on the Mountain, and parking in the Rescue Beacon Repair Zone or Floor Goal.

DRIVER-CONTROLLED PERIOD

During the Driver-Controlled period, teams retrieve up to five Debris at a time from the playing field and place them in Mountain Goals or Floor Goals. Debris may not be de-scored from the Mountain Goals but may be de-scored from the Floor Goals. Robots also scale the Mountains to release Climbers that slide down a Zip Line to safety.

END GAME

The final 30-seconds of the Driver-Controlled period is called the End Game. In addition to the Driver-Controlled period tasks, robots earn bonus points in the End Game by hanging from the Pull-up Bar on the topmost vertical section of the Mountain and claiming an All Clear Signal for their alliance.



Autonomous Period Scoring	Points
Robot Parked in a Rescue Beacon Repair Zone	5 points
Robot Parked in a Floor Goal	5 points
Robot on the Mountain and Touching the Floor	5 points
Robot Parked on the Mountain Low Zone	10 points
Robot Parked on the Mountain Mid Zone	20 points
Robot Parked on the Mountain High Zone	40 points
Rescue Beacon Illuminated for an Alliance	20 points per side
Climber in a Shelter	10 points per Climber
Driver-Controlled Period Scoring	Points
Debris Scored in a Floor Goal	1 point each
Debris Scored in a Mountain Low Zone Goal	5 points each
Debris Scored in a Mountain Mid Zone Goal	10 points each
Debris Scored in a Mountain High Zone Goal	15 points each
Robot on the Mountain and Touching the Floor	5 points
Robot Parked on the Mountain Low Zone	10 points
Robot Parked on the Mountain Mid Zone	20 points
Robot Parked on the Mountain High Zone	40 points
Climber Released/Slid Down the Zip Line	20 points each
Climber in a Shelter	10 points per Climber
End Game Scoring:	Points
Robot Completely Supported by the Pull-up Bar	80 points
Claim an All Clear Signal	20 points per Signal



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