

2020 RoboPlay Challenge Competition

Call for Participation

January 13, 2020	–	Priority Registration & Award Nominations Open
January 27, 2020	–	General Registration Opens
March 20, 2020	–	Registration deadline
March 27, 2020	–	Award Applications Due
April 10, 2020	–	Deadline for Finalizing Teams on Scoreboard Media Release Forms Due Registration Fees Due
May 16, 2020	–	RoboPlay Challenge Competition

The RoboPlay Challenge Competition is designed for students to showcase their real-world problem-solving skills in a competitive environment. This competition simulates an unexpected problem occurring at a remote location such as a space station or planetary habitat, where a robotic solution must be quickly developed and deployed using only existing resources. The competition challenges students to creatively use modular robots and accessories to complete various tasks. The competition arena and specific challenges will be kept secret until the day of the competition. Using their math, programming, and problem-solving skills, students try to most efficiently get the highest score for each task.

Note: Due to venue restrictions, registration will be on a first-come, first-served basis. Priority is given to C-STEM Schools. We will be forced to turn away teams from non-subscribing schools and schools that register late if we exceed our space capacity.

Team Creation

A team consists of 3-5 students who attend the same K-12 school. Each team must be sponsored by a teacher. The teacher must be present for the entire competition, or their team will be disqualified.

Division A – One or more student on the team is currently enrolled in or has completed: Algebra 2 / IM 3 or above; All students are in grades 9-12

Division B – All students on the team are currently enrolled in or the highest level they have completed: Algebra 1 / Geometry / IM 1 / IM 2; All students are in grades 9-12

Division C – All students on the team are in grades 7-8

Division D – All students on the team are in grades 5-6

Teachers, please encourage your students to create teams of the appropriate level, as the challenges in each successive division involve significantly more advanced mathematical requirements.

Registration Fees

Registration costs **\$350** per team. Each team receives one t-shirt per student, 5 2020 RoboPlay Challenge Booklets, and 1 2020 RoboPlay Challenge Mat. Each teacher who registers one or more teams receives a 2020 RoboPlay Teacher t-shirt and a 2020 RoboPlay Challenge Booklet. No refund after registration fee due date.

Technology Requirements

In order to receive technical support from our RoboPlay Challenge Competition Staff, please check that your systems meet the necessary specifications before the day of the competition.

- Software: C-STEM Studio v5.5.2 or above, Ch 8.0, Linkbot Labs 1.1.1
- Hardware: Windows XP or above, Mac OS X 10.6.8 or above

Registration Rules

- Each teacher may sponsor up to two teams. Any C-STEM Teacher who teaches more than two verified C-STEM classes may sponsor as many teams as verified C-STEM classes you are teaching. To have a C-STEM class verified, please have your Principal fill out [this form](#) and send it to roboplay@c-stem.ucdavis.edu with the Subject "C-STEM Class Verification for RoboPlay." **Note that teachers bringing more than two teams may only bring one team from each class.**
- **Priority registration** begins January 13, 2020. **Only C-STEM Teachers from schools with a current annual C-STEM Subscription will have the opportunity to register their teams at that time.** General registration begins January 27.
- Register early to secure your spot. For 2020 RoboPlay Competition, if we exceed capacity, teams will be accepted on a **first come, first served basis.**








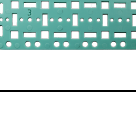
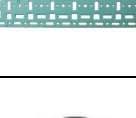

Equipment

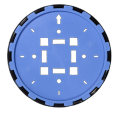
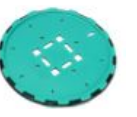


Each team must bring their own Laptops, Linkbots, and accessories for the competition. To purchase supplementary materials, go to <https://www.barobo.com/shop>.

Teams may also bring a protractor, writing utensils, a compass, string, USB flash drives, measuring tapes (8 feet), extension cords, and multi-port USB chargers for the Linkbots.

In the interest of fairness, each team brings the same Linkbots and accessories. Backup Linkbots and accessories are allowed but may not be used in the pit or competition areas in excess of the quantities listed below. **Note that there is only one acceptable version of each accessory. Teams may not use parts other than those listed and pictured below.** Linkbots with an opaque white chassis are acceptable as well, as are blue snap connectors. If you do not already have the newer wheels, caster, and push scoop you will also need a [Drive Accessory Pack](#).

If you do not already have rectangle connectors, U connectors, L connectors, or enough cube connectors or bridge connectors, you will need a [2019 RoboPlay Supplementary Pack](#).

Part	Image	Quantity
Linkbot-I		4
Linkbot-L		1
Linkbot-I, Linkbot-L, or Dongle		1
Snap Connector		55
Caster		4
Push Scoop		2
L Connector		4
Rectangle Connector 3 inches		6
Rectangle Connector 5 inches		6
Snap Connector Cap		12

Part	Image	Quantity
3.5" Wheel		8
4" Wheel		4
Bridge Connector		8
Gripper Pair		2
Cube Connector		10
Hacky Sack		1
U Connector		4
Rectangle Connector 4 inches		6
T Connector		6
1" RGBY Foam Cubes		4 of each color

General Information

Each Division has 10+ challenges to complete in any order. Challenges provide explicit instructions for receiving points. The goal is to get as many points as possible. Most challenges have partial points available, so teams may attempt portions of challenges as well.

The day is broken into two parts, unscored practice and scored competition. Each part is three hours long. Students may check their nametags or the schedule brochure for their practice and competition time slots. If they are late, they will not be allowed to make up any time.

Unscored Practice Information

- All teams have a designated practice area (pit) that gives them space to practice with their own 2020 RoboPlay practice mat.
- Each team receives two 17-minute practice periods to practice on their official 2020 RoboPlay Competition Board between 10am and noon that is located in the competition area.

Scored Competition Information

- Each team is assigned an official 2020 RoboPlay Competition Board in the Competition Area that is monitored by one or more RoboPlay Judges.
- Each team receives three 17-minute competition periods to compete on their official 2020 RoboPlay Competition Board between 12:45pm and 3:45pm.

Competition Rules

In The Pits (Practice)

- Teams may use as many laptops as they have students.

At The Competition Table (Competition Time)

General Rules

- Teams may only bring one laptop into the Competition Area at a time.
- Teams may not interact with their running program unless explicitly allowed in the challenge text. Some challenges will require user input at startup.
- Teams are responsible for setting up the Competition Board for each run of each challenge as specified in the challenge text unless otherwise stated.

Coding Rules

- All challenge tasks must be completed using a computer program written in Ch and run in ChIDE. TiltDrive and Copycat modes are prohibited unless stated otherwise in the challenge.

Scoring Rules

- Any challenge that is ongoing when a team's 17-minute time slot ends will be immediately stopped and points will be calculated.
- Students may attempt each challenge as many times as they like within their allotted competition time. If a challenge is attempted multiple times, only the points from the highest scoring run will be kept.
- Challenges may not be "chained together" meaning that a single program cannot receive points for more than one challenge at a time.
- Each challenge attempt, regardless of outcome, counts as a run. In the case of two teams with identical scores, the number of runs will be used as a tie-breaker, with the lowest number of attempts winning the tie.
- Teams may abort a run at any time by touching a Linkbot or calling "abort." Aborted runs still count as attempts and score zero points.
- While a program is still executing but no penalty points are possible, teams may ask the judge for a "partial call" in order to abort the run but still receive partial points. The judge must agree to the partial call before teams touch any Linkbots or the run will be scored as an abort.
- At the end of each run the judge will show teams their run number and run score prior to submission. If a team wishes to contest the score for a run, they must call for a Head or Lead Judge at that time.

At All Times

- Teams may not share laptops.
- Teams may not use more materials than are specified in the Equipment section at any time in any location.
- Use of electronics other than the allowed laptops is strictly prohibited. This includes other computers, calculators, cell phones, tablets, or any other computing device.
- There will be no internet access during the competition. Any team caught using the internet will be disqualified.
- Teams may not share the computer programs they create with any other team. This will be considered cheating and both teams will be disqualified.
- Teams may speak to the judges or the Support Team for clarification, but students may not solicit help with challenges or Linkbots from students outside their team, any teachers, or any parents or observers.

Challenge Competition Awards

Regional Awards

Regional awards are given to the first, second, and third place winners for each division at each of the RoboPlay Locations. Regional awards are not issued in divisions with fewer than 4 competing teams.

Statewide Awards

Statewide awards are given to the first, second, and third place winners for each division across the state.

Judges Awards

The judges decide three additional awards for each division at each RoboPlay Location:

- Perseverance Award - This award goes to the team that improvises and overcomes a difficult situation while still maintaining a high level of performance.
- Spirit Award - This award celebrates a team that displays extraordinary enthusiasm and spirit
- Teamwork Award - This award recognizes a team that fluidly works together with strong communication, tasks delegation, and excellent time management.

Registration Instructions

There are three registration steps: Team Registration, Payment, and Scoreboard Team Data Registration.

- Team Registration must be completed by the supporting teacher online at the link below before 11:59pm on March 20, 2020. C-STEM Teachers registering more than two teams must submit the [verification form](#) by April 10, 2020.
<http://c-stem.ucdavis.edu/roboplay/register>
- Payment must be received in full before April 10, 2020. After payment has been received, the supporting teacher will be given access to register their team data on Scoreboard.
- All Team Data and Students must be registered on Scoreboard by the supporting teacher by 11:59pm on April 10, 2020. Students may not register themselves.

Teams that have not been completed all three registration steps by the April 10 deadline will be excluded from the competition.

Organizer

UC Davis Center for Integrated Computing and STEM Education (C-STEM)

Co-organizers

UC Davis Integration Engineering Laboratory
Hewlett Packard Enterprise

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