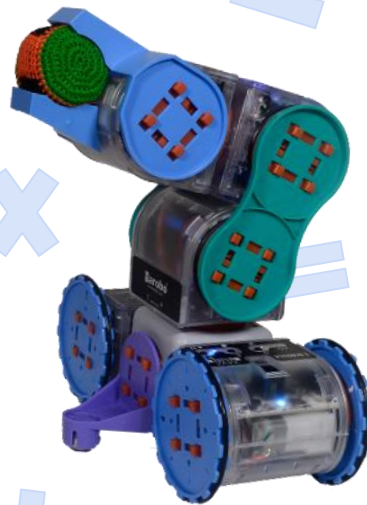


# Sample Information Brochure



2023  
**RoboPlay**  
Challenge  
Competition



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**UC DAVIS**  
C-STEM Center

# **C-STEM is a UC approved Educational Preparation Program for Undergraduate Admission to all UC Campuses**

## **Message From the Director**

Dear C-STEM Teachers and Students,

Welcome to the 2023 RoboPlay Challenge Competition!

After a hiatus during the COVID-19 Pandemic, we are back to presenting a new model of RoboPlay Challenge Competition: a RoboPlay Challenge Competition organized locally by a school or district to showcase their students' math problem-solving skills, creativity, and teamwork by tackling exciting challenges.

In the past few years, the number of C-STEM schools has grown rapidly in multiple regions of California, resulting in a high number of schools and student teams participating in the annual RoboPlay Challenge Competition. In 2019, we operated at the maximum capacity of the UC Davis Pavilion! We have been searching for a new model of RoboPlay Challenge Competition that can address the issues of venue capacity and democratizing access: schools that are located far from UC Davis had trouble sending student teams to compete in Davis.

In our new model of RoboPlay Challenge, each school or district is encouraged to organize its own local competition either in one or a half-day. RoboPlay is driven by teachers and administrators from each school or district. UC Davis C-STEM Center will provide structure, resources, and guidance.

We would like to extend a warm welcome to our participants and express our appreciation to everyone at the schools and district whose support made this RoboPlay Challenge possible. In particular, ***a special thank you to the lead teachers, volunteer judges and administrators*** - who took on the initiative and drive to organize this RoboPlay Challenge, an exciting student competition and a dynamic showcase of student learning.

We are proud of our C-STEM students and partner teachers and administrators for their extraordinary work and accomplishment. RoboPlay is a level-playing field robotics competition. By participating in this competition, everyone is a winner.

Students, good luck in the competition! Have fun!

Dr. Harry H. Cheng  
C-STEM Director and Professor

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## Contact Information

Info on UCD C-STEM Program

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Webpage: <https://c-stem.ucdavis.edu/>

Info on RoboPlay Challenge

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Email: [roboplay@c-stem.ucdavis.edu](mailto:roboplay@c-stem.ucdavis.edu)

Webpage: <http://c-stem.ucdavis.edu/roboplay/>

Share photographs taken during the RoboPlay Competition with the UC Davis C-STEM Center at [roboplay@c-stem.ucdavis.edu](mailto:roboplay@c-stem.ucdavis.edu) for a chance to be featured on the C-STEM website and social media!

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RoboPlay Challenge Competition Schedule

DATE HERE

Time	Event
8:00 AM – 8:45 AM	Student teams check in for the RoboPlay Competition & setup in the practice area. Media Release forms due. Judges check-in and meet to review the challenges.
8:45 AM – 9:00 AM	Welcome & Review of Important Rules for Student Teams
9:00 AM – 10:00 AM	<u>Teams Practice at Assigned Practice Area</u> RoboPlay Challenge brochure is released to student teams at 9:00AM. Teams have one hour to work together to find solutions for 3 challenge problems. <b>Each team has one optional 8-minute practice session to try out their solutions in front of their assigned judges.</b> (Students, for your 8-minute practice session, line up 3 minutes prior to your scheduled time.)
10:00 AM – 11:30 AM	<u>Challenge Competition</u> Judging time! Each team has two 10-minute sessions to showcase their solutions to the judges for scoring. (Students, for your 10-minute challenge sessions with judges, line up 3 minutes prior to your scheduled time.)
11:30 AM – 12:00 PM	Lunch for students; working lunch for Judges to discuss final scores and judges' awards.
12:00 PM – 12:30 PM	Awards Ceremony & Group Photos

## Student Team Schedule by School

Team #	Team Name	Table	Practice Session (8 minutes)	Competition Session 1 (10 minutes)	Competition Session 2 (10 minutes)
1	Glizzy Gladiators	A	9:50am – 9:58am	10:30am-10:40am	11:00am-11:10am
2	The 3 Musketeers	A	9:40am-9:48am	10:15am-10:25am	10:45am-10:55am
3	The Space Cowboys	A	9:30am-9:38am	10:00am-10:10am	11:15am-11:25am
4	The "A" Team (Div. A)	B	9:30am-9:38am	10:00am-10:10am	11:15am-11:25am
5	Timberwolves	B	9:40am-9:48am	10:15am-10:25am	11:00am-11:10am

## Student Team Schedule by Time

Session	Competition Table A		Competition Table B	
<b>Practice Session (8 minutes)</b>	9:30am-9:38am	T3 – The Space Cowboys	9:30am-9:38am	T4 – The "A" Team
	9:40am-9:48am	T2 – The 3 Musketeers	9:40am-9:48am	T5 – Timberwolves
	9:50am-9:58am	T1 – Glizzy Gladiators	9:50am-9:58am	No Team
<b>Competition Session 1 (10 minutes)</b>	10:00am-10:10am	T3 – The Space Cowboys	10:00am-10:10am	T4 – The "A" Team
	10:15am-10:25am	T2 – The 3 Musketeers	10:15am-10:25am	T5 – Timberwolves
	10:30am-10:40am	T1 – The Glizzy Gladiators	10:30am-10:40am	No Team
<b>Competition Session 2 (10 minutes)</b>	10:45am-10:55am	T2 – The 3 Musketeers	10:45am-10:55am	No Team
	11:00am-11:10am	T1 – The Glizzy Gladiators	11:00am-11:10am	T5 – Timberwolves
	11:15am-11:25am	T3 – The Space Cowboys	11:15am-11:25am	T4 – The "A" Team

# COMPETITION INFORMATION

## General Competition Information

There are 3 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.

The competition lasts **2.5 hours**, split into two sessions.

- Unscored Practice Session: The **first** hour is for students to build and program their robots to complete the challenges presented during the competition.
- Scored Competition Session: The last **1.5** hours are for teams to compete at the competition table to earn points for challenges solved.
- Students need to check the schedule brochure for their practice and competition time slots. If they are late to their assigned competition table, they will not be allowed to make up any time.

## Unscored Practice Information

- Each team has a designated practice area (pit) that gives them space to practice with their own practice mats.
  - Grades 3-4 use RoboTown for grades 2-5
  - Grades 5-6 use RoboTown for grades 2-5 or grades 6-12
  - Grades 7-8 use RotoTown for grades 6-12
  - Grades 9-12 use RobExploration for grades 6-12
- Each team receives one 8-minute practice period to practice on their official RoboPlay Competition Table between **9:30am to 10:00am** in the competition area.

## Scored Competition Information

- Each team is assigned an official RoboPlay Competition Table in the Competition Area that is monitored by one or more RoboPlay Judges.
- Each team receives two 10-minute competition periods to compete on their official RoboPlay Competition Table between **10:00am to 11:30am**.

# COMPETITION RULES

## Teams

- All team members must be enrolled in a K-12 school.
- Each team must have 3 – 5 participants.
- Each teacher who advises/teach students can sponsor typically up to 2 teams. However, the school or district that organizes the competition can set their own limit on the number of teams a teacher can bring.
- The sponsoring teacher must be present and register the team on the day of competition.

## General Rules

- Teams may not share laptops or use more materials than are specified in the Equipment section at any time.
- 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 internet access during the competition for RoboBlocky only. Any team caught using the internet for anything else other than RoboBlocky will be disqualified.
- Teams may not collaborate with other teams.
- 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 or anyone else.

## Practice Area Rules

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

## Competition Area Rules

### *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.
- Teams are responsible for setting up the Competition Board for each run of each challenge as specified in the challenge text unless otherwise stated.

## Scoring Rules

- Any challenge that is ongoing when a team's 10-minute time slot ends will be immediately stopped and points will be calculated based on the rules for a partial call.
- Before attempting to solve a challenge, it is the responsibility of student teams to let judges know which challenge they will attempt to solve each time.
- 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. However, if the challenge explicitly states that more than one program can be chained together, it is allowed.
- 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 abort a run at any time by touching a running Linkbot or calling "abort." Aborted runs still count as attempts and score zero points.
- While a program is still executing, 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 finalizing the score. If a team wishes to contest the score for a run, they must call for a Head or Lead Judge at that time.



## Challenge Competition Awards

### Awards

Awards are given to the first, second, and third place for total points earned.

### Judges Awards

The judges will select teams for the following additional awards:

- **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.

## Technology Requirements

- To receive technical support from our RoboPlay Challenge Competition Staff, please check that your systems meet the necessary specifications one or more weeks before the day of the competition. Do not update software the day before the competition as it may cause issues that take time to resolve.
- Software: The latest Linkbot Labs bundled with Ch and C-STEM Studio for Windows, MacOS, Linkbot IDE for Chromebook
- Hardware: Laptop with Windows or MacOSX, Chromebook
- Please download the software from the link below before competition day:  
<https://roboblocky.com/download/>

## Software/Programming

- All challenge tasks must be completed using a computer program (no tilt drive or copycat mode allowed).
- Programs for controlling the robots can be written either in blocks in RoboBlocky using Windows, MacOSX, or Chromebooks; or in Ch/C/C++ and run in ChIDE in Windows or Mac machines.
- Teams may not interact with their running program unless explicitly required

in the challenge text.

## Equipment

- Each team must use the same robotics equipment.
- Each team in grades 3-4, 5-6, and 7-8 uses [4 Linkbot Bundle](#) and a [RoboTown mat](#).
- Each team in grades 9-12 uses [4 Linkbot Bundle](#), a [Linkbot-L](#), a [RoboExploration mat](#).  
Some examples of how to use these accessories can be found [here](#).
- Each team must bring its own robots and accessories for the competition.
- Each team must use their own laptops.
- There will be no internet access during the competition, except for those using RoboBlockly for coding.
- Cellular phones are not allowed at any time during the competition.

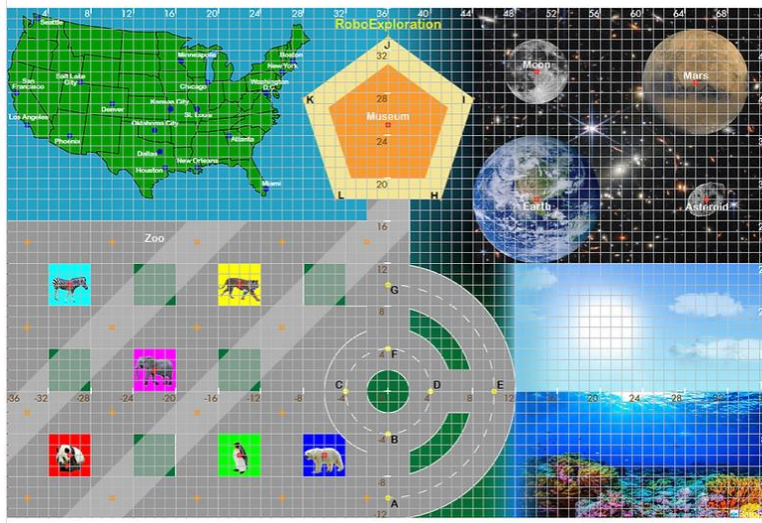
**Note:** A list of 4 Linkbot Bundle parts can also be found via <https://www.barobo.com/product-page/4-linkbot-bundle>

**One Linkbot L**



[Linkbot-L \(barobo.com\)](http://barobo.com)

## RoboPlay Mats



**RoboExploration Activity Mat (Grades 6-12)**

<https://www.barobo.com/product-page/activity-mat-roborexploration>



































**RoboTown Mat (Grades 2-5 has coordinate system)**

**RoboTown Mat (Grades 6-12 has coordinate system & four quadrants)**

**[Activity Mat: RoboTown \(two versions\) | website \(barobo.com\)](https://www.barobo.com)**

## 4 Linkbot Classroom Bundle Product Parts

Name	Picture	Name	Picture	Name	Picture
Linkbot-I (Joints 1 and 3 can move, Joint 2 is fixed)	 4	Rectangle Connector 4 inches	 4	Hacky Sack	 1
Linkbot Dongle	 4	Rectangle Connector 5 inches	 4	A pack of screws and nuts	 1
36" USB Cable	 4	T Connector	 4	#6-32 X 5/16" Screw	 100
7" USB Cable	 4	U Connector	 2	Gripper Pair	 2
Snap Connector	 42	Snap Connector Cap	 8	Bridge Connector	 4
3.5" Wheel	 8	Small Ball Caster	 2	Cube Connector	 10
4" Wheel	 8	Pen Holder	 2	L Connector	 4
Ball Caster	 4	Pen Adapter	 2	Tape Measure	 1
8"x10" Resealable Bag	 4	Rubber Band	 4	Activity Mat: MathGrid	 1
1" RGBY Foam Cubes	 8 of each color	8-Port USB Charger	 1	Activity Mat: GeoGrid	 1
Rectangle Connector 3 inches	 4	Push Scoop	 4		

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About RoboPlay Competition: <http://c-stem.ucdavis.edu/roboplay/>