RobotChallenge LEAGUE Initiation

Steel Melody Theme Competition Rules

Revised on November 28, 2024

Competition Theme: "Steel Clashes with Notes, Igniting a Sensory Feast! The 'Steel Melody' Music Festival is Here!"

This is no ordinary music festival—it’s a sensory revolution! We’ve meticulously combined stunning stage design, electrifying atmosphere, immersive interactive experiences, and performances by top-tier musicians to deliver an unprecedented fusion of technology and art!

Prepare to ignite your passion and unleash your soul in the collision of steel and melody! The "Steel Melody" Music Festival awaits!

Material Transportation

Transporting infrastructure materials is a critical step for the festival, ensuring the venue can be successfully constructed.

≤ 5 years old

1. Competition Field

Field dimensions: 0.5m × 1.1m (material: UV knife-coated fabric).

2. Robot Requirements

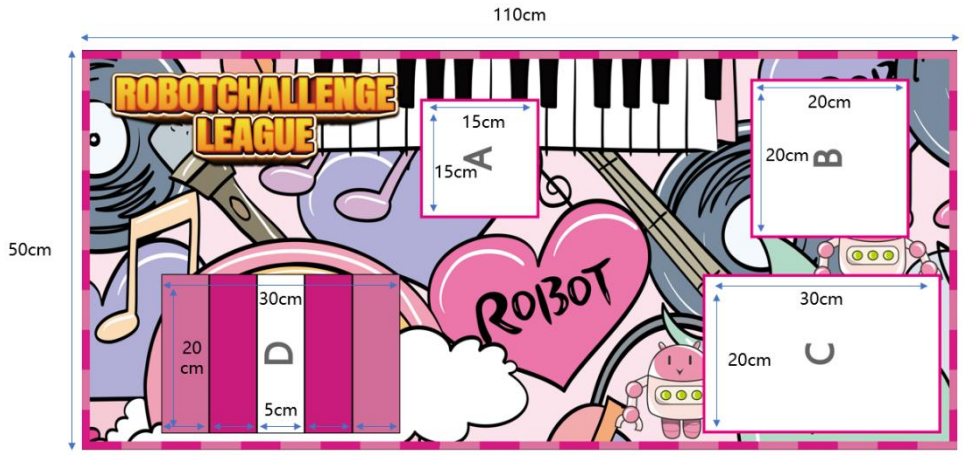
A. Participants must bring their own equipment. All parts must be large-grain building blocks (brand-agnostic). Recommended kits: LEGO® Basic Set 9090, LEGO® Pipe Set 9076, or equivalent kits from other brands.

3. Competition Tasks

3.1 Task Overview

A. Contribute to the music festival’s infrastructure with your ingenuity!

B. Build a transport platform, deliver materials to designated zones, and use a launching device for precise deployment.



3.2 Field Markings and Props

A. Zones:

Transport Platform (A): Build here.

Delivery Zone (B): Transport materials here.

Launching Zone (C): Deploy materials here.

Landing Zone (D): Divided into colored sub-zones (red, yellow, blue).

Materials: 4 DUPLO® balls (any color).

B. Only the field layout and markings are provided during the competition. All building materials and props must be brought by the team.

3.3 Assembly Phase Instructions

3.3.1 Building the Transport Platform

A. Build a transport platform in Zone A with a minimum height of 10 blocks.

B. The platform must fit entirely within Zone A (excluding connected channels).

C. Build a transport channel from the platform’ s top to Zone B for moving DUPLO® balls.

D. The channel must use one of two methods:

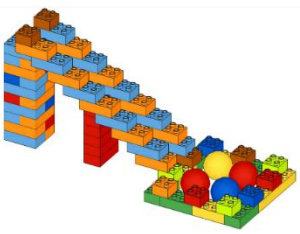
a) Step-style channel using standard blocks.

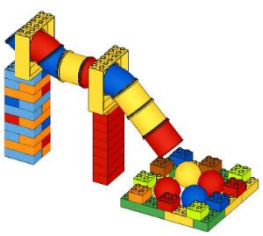
b) Pipe-based channel.

E. Build a fence structure in Zone B (size within B, height ≤2 blocks) to hold materials.

F. The channel must connect securely to the platform but may disconnect from the fence.

G. Build a lever-based launching device in Zone C (size within C, even when swinging). Power source must be manual.





H. Examples of platform, channel, fence, and DUPLO® balls are shown below.

3.3.2 Material Delivery

A. After completing assembly, begin the delivery phase.

B. Release DUPLO® balls one by one from the channel’ s top. Gravity must guide them into the fence in Zone B.

3.3.3 Material Launching

A. After delivery, begin launching balls from Zone C to Zone D.

B. Retrieve balls from the fence, load them into the launcher, and aim for precise landings in Zone D.

3.3.4 Scoring Criteria

A. Functional transport platform: 15 points.

B. Functional transport channel: 25 points.

C. Functional fence: 10 points.

D. Functional launching device: 30 points.

E. Non-compliant builds (if non-disruptive): 5 points per build.

F. Balls successfully delivered to the fence: 10 points/ball.

G. Dropped or undelivered balls: 5 points/ball.

H. Scoring based on first landing in Zone D:

a) Red zone: 20 points/ball.

b) Yellow zone: 10 points/ball.

c) Blue zone: 8 points/ball.

d) Outside Zone D: 5 points/ball.

I. Structural damage or fallen parts during tasks: -10 points per incident.

3.3.5 Total Score

A. Assembly score: 80 points max. Task score: 120 points max. Total: 200 points.

B. Time bonus: 10% of total score (based on remaining seconds).

C. Time bonus = (Remaining time ÷ Total time) × 20.

D. Total score = Task score + Time bonus.

4. Competition Requirements

4.1 Time Limit

12 minutes per team (includes assembly and tasks).

4.2 Rounds

2 rounds per team.

4.3 Start of Competition

A. Judges inspect equipment for compliance before each round.

B. Teams place disassembled equipment near task zones and signal readiness.

C. Countdown: 3-2-1, whistle starts the round.

D. Assembly must be completed before delivery; delivery must finish before launching. Judges end the round after all tasks.

4.4 End of Competition

A. Time ends at 12 minutes; final score tallied.

B. Teams may finish early; time stops when signaled.

4.5 Rankings

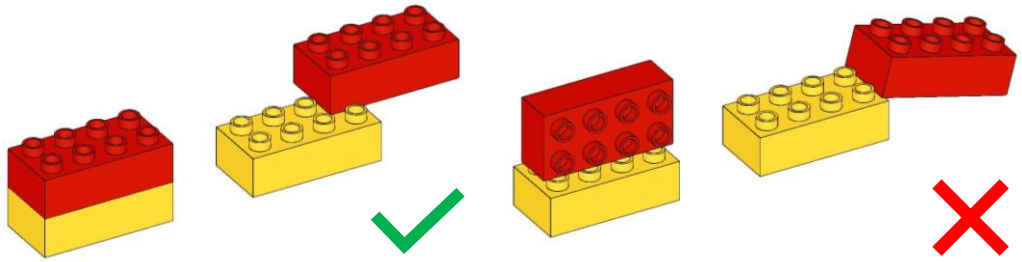
A. Best of two rounds determines ranking.

B. Tiebreaker: Team with more remaining time in highest-scoring round wins.

C. Further tiebreaker: Compare secondary scores and remaining times.

5. Notes

A. Valid block connections are shown in the diagram.



B. If damage or fallen parts do not hinder tasks, teams may continue or repair (time continues).

C. All 4 balls must be launched regardless of delivery success.

D. Undelivered balls must be manually placed in the fence before launching.

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"Material Transportation" Scoring Sheet

Judge Items			Value	Points	Score
1	Assembly Score	Functional transport platform	0 1 (N) (Y)	15	
		Functional transport channel	0 1 (N) (Y)	25	
		Functional fence	0 1 (N) (Y)	10	
		Functional launching device	0 1 (N) (Y)	30	
		Non-compliant builds (non-disruptive)	0 1 2 3 4	5	
2	Delivery Score	Balls successfully delivered to the fence	0 1 2 3 4	10	
		Dropped or undelivered balls	0 1 2 3 4	5	
3	Launching Score	First landing in white zone	0 1 2 3 4	20	
		First landing in red zone	0 1 2 3 4	10	
		First landing in pink zone	0 1 2 3 4	8	
		First landing outside Zone D	0 1 2 3 4	5	
4	Number of structural damages or fallen parts during tasks			-10	
5	Time bonus = (Remaining time (seconds) ÷ Total time (seconds)) × 30 (10% of total score)				
			Total Score		
			Remaining Time:		