

# ROBOSOC CER

## Autonomous & Semi-Autonomous Robotics Competition

Ingenium — IIT Indore

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### Competition Overview

ROBOSOC CER is a robotics competition where teams design and build robots capable of playing a soccer-style game inside a controlled arena.

The competition emphasizes navigation, sensing, actuation, and real-time control strategies, challenging teams to combine mechanical design with effective control logic to compete against opposing robots.

### Objective

To design a robot capable of detecting the ball, navigating efficiently within the arena, and coordinating movements to score goals against an opposing team.

### Team Composition

- Teams must consist of 2 to 4 members

### Technical Constraints

- **Maximum Robot Size:** 250 mm × 200 mm × 200 mm
- **Maximum Weight:** 4 kg
- **Drive Mechanism:** Wheeled only
- **Control Mode:** Manual or semi-autonomous
- **Power Source:** On-board rechargeable battery

### Arena Specifications

- **Arena Size:** 4 m × 6 m
- **Surface:** Flat, non-reflective surface
- **Goals:** Fixed goal posts on both ends

## Competition Structure

### Stage 1: System Design Submission (Online | Pre-Competition)

Teams must submit:

- Robot system overview and block diagram
- Sensor and actuation strategy
- Control approach (manual or semi-autonomous)
- Safety considerations and power management description

This stage is used for shortlisting teams and ensuring design feasibility.

### Stage 2: Design & Functional Verification (Offline | Before Matches)

- Mobility and drive testing
- Ball detection and control verification
- Wireless communication and safety checks

### Stage 3: Match Rounds (Offline | Competition Days)

- Team-versus-team matches
- Fixed match duration
- League or knockout format

Rules are subject to change at the discretion of the organisers.  
Further instructions will be communicated to registered participants.