CAPITAL YOUTH EXPO · COMPETITION RULEBOOK

No. 02 • ROBOTICS

Line Following Robot (LFR)

Build an autonomous robot to navigate a black arena track guided by a white line. The robot must successfully navigate complex curves, grid junctions, and sharp angles to reach the finish line in the shortest time.

Rules & Specifications

Team Composition	Maximum 3 to 4 members per team.
Robot Dimensions	Chassis dimensions must not exceed 10" × 10".
Hardware Requirements	Must use a Microcontroller with IR Sensor Array. Any base/chassis, motor shield, and RPM motors allowed.
Power Limit	Battery voltage must not exceed 12V nominal. A 3S LiPo (11.1V, up to 12.6V fully charged) is allowed.
Arena Specifications	Arena dimensions: 12 × 6 Feet (Black background with smooth white line & multiple junctions).
Tries & Penalties	• Maximum 3 attempts permitted per team. • Each restart/retry incurs a penalty deduction of 5 marks. • Going off-track incurs a 2-second time penalty. • No touching the robot while on the active track.
Winning Criteria	The robot that completes the entire track navigation accurately in the minimum time is declared the winner.

General Rules — Applicable to This Category

— Technical Scrutineering — All robots and hardware submissions must pass a mandatory safety and dimensional check prior to entering any official round.

— Strict Punctuality — Teams must report to their arena, lab, stage, or table 15 minutes before their scheduled heat or session. Late arrival results in automatic forfeit.

— Fair Play & Sportsmanship — Abusive behavior, argument with referees/judges, or unsportsmanlike conduct leads to immediate disqualification.

— Judge's Decision — The decision of the technical panel, head referees, and judges is indisputable and final.

Track & Scoring Details

— Line Width: The white line is 3 cm (about 1.2 inch) wide.

— Track Surface: Matte Panaflex, completely flat with no ramps or bumps.

— Attempts: The best attempt counts. Any attempt may be used as a learning run.

These rules are issued by the Capital Youth Expo organizing committee and apply alongside the master rulebook. The committee reserves the right to modify rules, time limits, or format if necessary. Judges' decisions are final and non-contestable.