Robot Tour

2024-25 CVHS Scioly

Agenda

- Welcome and Introductions
- Team goals
- Overview of Robot tour
- Timeline
- Materials and Resources
- Robot Design Discussion
- Safety
- Team Policies
- Next steps and Assignments

Welcome!

- Coaches
  - Frank Deng
    - https://www.linkedin.com/in/frankdeng/
    - 2nd year RT coach
  - Bryce Deng

- Team assignments

Welcome!

- Green
  - Dylan Kwan
  - Jordan Tran
- Blue
  - Brandon Li
  - Eden Teclemariam

- Team assignments

Welcome!

- Yellow
  - Arin Yang
  - Judah Chung
- Purple
  - Bryce Deng
  - Tulasi Venkatesh

- Team assignments

Team goals

- Skills and knowledge
  - Mechanical and Electronics
  - Robotics engineering
  - Software development
- Innovation
  - Apply theoretical knowledge in practical ways
- Problem solving and troubleshooting
  - Identify and fix issues in design, programming
  - Iterative testing
- Teamwork and project management
  - Collaborative design
  - Time management

Robot tour Overview

- https://www.soinc.org/robot-tour-c
- Science_Olympiad_Div_C_Rules_2025_for_Web_Secured.pdf

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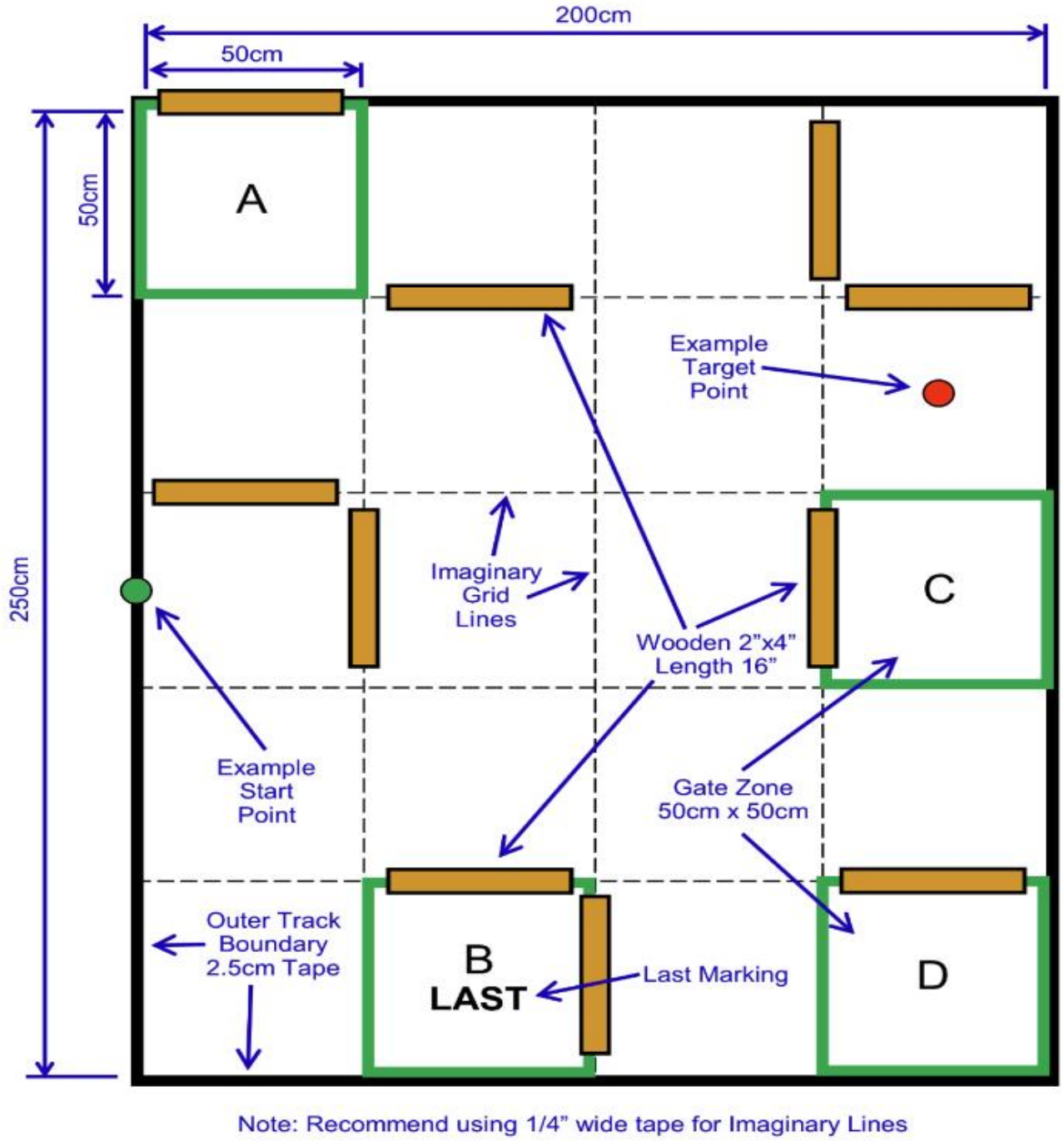

Robot tour Overview

Build

- Build an autonomous Robotic Vehicle to navigate a track
  - Not Remote Controlled
  - Event goals allow low cost robot kits to be competitive •
- Powered by up to 6 AA or AAA batteries
- Must completely fit in a 30cm by 30cm space of any height
- •1/4” to 3/8” Dowel attached to front of Robotic Vehicle
- Sensors
- Alignment device

Robot tour Overview

competition

- Impound
  - Track setup and target time released after impound
- Setup Time: 10 min
  - Install batteries
  - Code and upload program
  - May only be tested provided the robot is held
- Track Time: 8 mins
  - 2 successful Runs or 3 failed runs

Robot tour Overview

Track

- Track Area: 200 x 250 cm
  - 4x5 = 20 imaginary square zones
- Start point
- Target point
- Wooden obstacles – up to 10
- Bonus gate zones
  - Regional: 4, States: 5, nationals 6
  - One gate zone is marked “last” (-15 pts vs -30 pts)
- Target time: 55 – 85 seconds

Robot tour Overview

Scoring

- Lowest final score wins
- Final score = Time score + Distance score + Gate bonus + Last gate bonus + Penalties
  - Time score: 200
    - Less than target time: (target time – run time) x 2
    - Greater than target time: (run time – target time
  - Gate zone bonus: -15 pts
  - Last gate zone bonus: -30 pts
  - Penalties
    - Contact(obstacles): 70 pts
    - No obstacles: 50 pts
    - Stalling: 20 pts
    - Competition violation: 150pts
    - Construction violation: 300 pts

Robot tour Overview

Key changes and updates

Q & A

- Track Area: 200x200 vs 200 x 250 cm
- Target time: 55-75 secs vs 55 – 85 seconds
- Distance score, 1 pts/cm vs 2 pts/cm
- One more gate zone marked as “last”
- Enter gate zone, forward, backward, sideways
- Clear definition of Stalling

Timeline Milestone

- Sep – Nov
  - Theoretical study
    - Basic Mechanical principles
    - Electronics and power system basics
    - Arduino, ESP32
    - Motor, sensors and control loop systems
  - Activities
    - Programing with Arduino, motors, sensors
- Nov 2024 – Feb 2025
  - Build
    - Build your robot
    - Build your program
  - Activities
    - Practice
    - Competitions – Invitationals, Regionals

Materials Resources

- Event home page https://www.soinc.org/robot-tour-c
- Forum https://scioly.org/forums/viewforum.php?f=454
- FAQ https://www.soinc.org/faq/robot-tour-div-c
- Science Olympiad community discord server – robot tour channel https://discord.gg/fPXJHnm9DE
- Youtube – search “scioly robot tour”

Safety

- Electrical
  - Batteries
  - Circuit
  - Motors
- Tool usage
  - Cutting
  - Soldering
- Storage

Team polices

- Rules
- Meetings
- Communication
  - Discord RT channel

Next steps
Assignments

- Wrap-up
- Final question
- Next meeting time and location
- Action items
  - Github account, create private repository

”Good Luck"

Robot tour