ASIMO'S APEX

Embark on a journey where robotics meets imagination, and the quest for innovation reaches new heights. In Asimo's Apex, we traverse the cutting-edge realm where human ingenuity meets mechanical precision. Prepare to engage in high-stakes challenges where programming, control, and creativity are your tools, and every movement brings you closer to the future of robotics. Here, the race to the apex begins - will you be the one to ascend?

Round 1 :

In this round, you will bring your already constructed robot for testing. Troubleshoot and improve your robot after testing it for the racing circuit and RoboWar Arena. Only the best robots will survive, and you will have to utilise this opportunity to optimise and improve yours.

Delegates can bring 1-2 pre-constructed robots. Testing includes verifying that the robot meets size, weight and safety requirements for both rounds

Delegates per team: 2-3

Round 2 :

Manufacture and construct a robot which can autonomously navigate a predefine course, while following a black line and avoiding obstacles. The robot must operate autonomously, meaning it must follow the course without any human intervention once the race begins. Be ready for twisty tracks and sharp turns, because only the robots which make it safely to the other side will remain on top.

Robot Specifications:

- Size Limit: Maximum size of 12 inches (L) x 12 inches (W) x 12 inches (H).

- Weight Limit: Maximum weight of 2 kg, including all components and batteries.

- Power Supply: Robots must be powered by onboard batteries. External power sources are prohibited.

- Autonomous Control: The robot must operate autonomously, meaning it must follow the course without any human intervention once the race begins.

Course Layout:

- Track Length: 12 feet long and 8 feet wide.

- Surface and Line: The track will feature a 1-inch-wide black line on a white surface that the robot must follow.
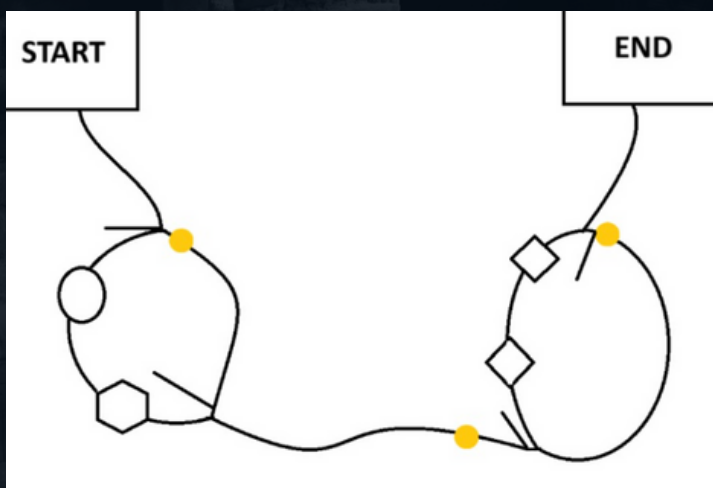
Obstacles:

- Curves and Intersections: The course will include sharp turns and intersections designed to challenge the robot's ability to follow the line accurately.

- Obstacles; The robot will have to distinguish between the route with and without obstacles to gain maximum points.

Mat Layout	
Start	Starting Point
End	Ending point
Yellow Circles	Checkpoints
Squares,Ovals,Hexagons	Obstacles

POINTS TABLE		
Task	Points	
Completing C1	10	
Completing C2	10	
Completing C3	10	
Reaching Endpoint	10	
Displace 0 Obstacles	40	
Displace 1 Obstacles	30	These points will only be awarded if the line is followed and the obstacle is crossed.
Displace 2 Obstacles	20	
Displace 3 Obstacles	10	
Displace 4 Obstacles	0	

Delegates per team: 2-3

Round 3 :

Your robots will be pitted against one another in a head-to-head combat round. Outmaneuver or disable the opponent robot within a time limit, using strategic design, weaponry, and control.

Robot Specifications:

- Size Limit: Maximum size of 14 inches (L) x 14 inches (W) x 14;inches (H).

- Weight Limit: Maximum weight of 5 kg, including all components and weapons.

- Power Supply: Robots must be powered by onboard batteries only.

- Control Systems: Robots may be controlled via Bluetooth or radio controllers. Teams can use microcontrollers such as Arduino, Raspberry Pi, etc., but the total weight must remain within the 5 kg limit.

Allowed Components:

- Weapons:

Spinning Weapons: Allowed, as long as they remain securely attached to the robot during the match.

Ramming Tools: Front or side-mounted arms for pushing or flipping the opponent are allowed.

Lifting Mechanisms: Permitted, provided they are secure and meet safety standards.

- Sensors and Microcontrollers: Any control systems, including Bluetooth and radio controllers, may be used for robot navigation and combat strategies.

Prohibited Components:

- Explosives or Firearms: Strictly forbidden

- Detached Weapons: Weapons that can fly off or pose a safety hazard are prohibited.

- Hazardous Materials: No chemicals or high-voltage components are allowed in the robot design.

Delegates per team: 2-3