ARC LAB'S

Communicate. Collaborate. Create.

Lego Robotics Workshop details

Trainer	Trainer has 10+ years of experience in building Lego Robots from scratch.	Team	
		Department: LEGO ROBOTICS	
		Point Person: Shiva Kumar	
Bootcamp	• Workshop for 2 days • Workshop for 3 days • Workshop for 5 days	Contact Details	
		+91-9052454439 hello@arclabs.in techarclab@gmail.com	

Curriculum for 2 days workshop

Topic	Sub-Topics
Day 1	
1. Introduction to LEGO Robotics	• Overview of LEGO Mindstorms kits and components • Introduction to the LEGO Mindstorms programming environment
2. Building LEGO Robots	• Understanding the LEGO building system • Step-by-step construction of a basic robot model
3. Programming Fundamentals	• Introduction to programming concepts using LEGO Mindstorms software • Understanding the basic programming blocks and their functionalities
4. Programming the Robot	• Writing and testing simple programs to control the robot's movement • Exploring sensor input and using it to make decisions
Day 2	
1. Advanced Programming Techniques	• Using loops and conditional statements to create more complex programs • Incorporating variables and math operations in programming
2. Exploring Sensors	• Introduction to different sensors (e.g., touch, ultrasonic, colour) and their applications • Utilizing sensor data to create responsive and interactive robot behaviours

Topic	Sub-Topics
3. Mission Challenges	• Designing and programming the robot to complete specific tasks or missions • Encouraging problem-solving and creativity through open-ended challenges
4. Project Showcase	• Students present their completed robot projects and share their learning experiences • Group discussions and feedback on the projects
Certification	
Arc Lab certification	Certification will be provided by the company to individual students and also Merti certificate will be provided to those who performed well in the workshop
Ministry of education	Certification from the central govt will also be provided to add more value to the certificate

Curriculum for 3 days workshop

Topic	Sub-Topics
Day 1	
1. Introduction to LEGO Robotics	• Overview of LEGO Mindstorms kits and components • Introduction to the LEGO Mindstorms programming environment
2. Building LEGO Robots	• Understanding the LEGO building system • Step-by-step construction of a basic robot model
3. Programming Fundamentals	• Introduction to programming concepts using LEGO Mindstorms software • Understanding the basic programming blocks and their functionalities
4. Programming the Robot	• Writing and testing simple programs to control the robot's movement • Exploring sensor input and using it to make decisions
Day 2	
1. Advanced Programming Techniques	• Using loops and conditional statements to create more complex programs • Incorporating variables and math operations in programming
2. Exploring Sensors	• Introduction to different sensors (e.g., touch, ultrasonic, colour) and their applications • Utilizing sensor data to create responsive and interactive robot behaviours
3. Mission Challenges	• Designing and programming the robot to complete specific tasks or missions • Encouraging problem-solving and creativity through open-ended challenges
Day 3	
1. Advanced Building Techniques	• Exploring more complex robot designs and mechanisms

	Incorporating gears, levers, and other advanced building
2. Collaborative Projects	• Working in teams to design and build custom robot projects • Collaborating on programming and solving challenges together
3. Project Showcase	• Students present their completed robot projects and share their learning experiences • Group discussions and feedback on the projects
Certification	
Arc Lab certification	Certification will be provided by the company to individual students and also Merti certificate will be provided to those who performed well in the workshop
Ministry of education	Certification from the central govt will also be provided to add more value to the certificate

Curriculum for 5 days workshop

Topic	Sub-Topics
Day 1	
1. Introduction to LEGO Robotics	• Overview of LEGO Mindstorms kits and components • Introduction to the LEGO Mindstorms programming environment
2. Building LEGO Robots	• Understanding the LEGO building system • Step-by-step construction of a basic robot model
3. Programming Fundamentals	• Introduction to programming concepts using LEGO Mindstorms software • Understanding the basic programming blocks and their functionalities
4. Programming the Robot	• Writing and testing simple programs to control the robot's movement • Exploring sensor input and using it to make decisions
Day 2	
1. Advanced Programming Techniques	• Using loops and conditional statements to create more complex programs • Incorporating variables and math operations in programming
2. Exploring Sensors	• Introduction to different sensors (e.g., touch, ultrasonic, colour) and their applications • Utilizing sensor data to create responsive and interactive robot behaviours
3. Mission Challenges	• Designing and programming the robot to complete specific tasks or missions • Encouraging problem-solving and creativity through open-ended challenges
Day 3	
1. Advanced Building Techniques	• Exploring more complex robot designs and mechanisms

	• Incorporating gears, levers, and other advanced building
2. Collaborative Projects	• Working in teams to design and build custom robot projects • Collaborating on programming and solving challenges together
3. Introduction to Competition Robotics	• Understanding the rules and strategies of robot competitions • Designing and programming robots to compete in simulated challenges

Day 4

1. Introduction to Sensor Integration	• Exploring advanced sensor integration techniques • Using sensor data to create sophisticated robot behaviours
2. Autonomous Navigation	• Implementing algorithms for autonomous robot navigation • Exploring obstacle detection and avoidance strategies
3. Project Development	• Students work on individual or group projects • Mentors provide guidance and assistance

Day 5

1. Project Refinement	• Students continue working on their projects • Fine-tuning designs, programming, and performance
2. Project Presentation	• Students showcase their completed projects • Presentations, demonstrations, and feedback sessions
3. Wrap-up and Reflection	• Recap of key concepts and skills learned during the workshop • Reflection on the overall learning experience

Certification

Arc Lab certification	Certification will be provided by the company to individual students and also Merti certificate will be provided to those who performed well in the workshop
Ministry of education	Certification from the central govt will also be provided to add more value to the certificate

NOTE: Throughout the workshop, emphasis should be placed on hands-on activities, teamwork, problem-solving, and critical thinking. The syllabus can be adjusted based on the age and skill level of the students and the available time for each session. Additional topics or challenges can be included to further enhance the learning experience.