UrbanScholar

PROGRAM BROCHURE



CAREER TRACK · ROBOTICS

ROBOTICS

A build-and-program robotics track — mechanics, electronics, and ROS — for learners who want a working robot at the end, not just a simulation.

10–12	7	6	2
WEEKS	MODULES	CAPSTONES	PROGRAM TRACKS

TWO TRACKS · KICKSTART & CAREER

Program Overview

How this track builds real robotics engineering skills

Mechanical, electrical & software — together. Robots fail at the seams between disciplines, so this track deliberately covers all three — mechanics, electronics, and control software — instead of treating robotics as just a programming problem.

Built-in mentorship. Each module closes with a mentor-reviewed checkpoint, so gaps get caught early instead of at the final capstone.

Career layer, not an afterthought. Resume positioning, interview readiness, and aptitude prep run alongside the technical modules — not bolted on in the last week.

Who This Is For

- Students & freshers targeting robotics/ automation roles
- Electronics/mechanical enthusiasts wanting a structured path
- Anyone comfortable with basic programming logic

What You'll Walk Away With

- 6 working robotics projects for your portfolio
- Working fluency in Arduino/Raspberry Pi & ROS basics
- A recruiter-ready resume built around real robot builds

Program Snapshot

18+ Hrs Live Instructor-Led Sessions

6 Working Robotics Projects

7 Structured Learning Modules

Training + Internship Certificate

Mentor-Reviewed Project Checkpoints

Placement & Interview Support

Learning Path

7 modules, sequenced from foundations to deployment

1 · Robotics Fundamentals

- Types of robots & where each is used
- Robot anatomy — sensors, actuators, controllers
- A map of real robotics applications

2 · Mechanical Basics

- Motors & actuators, chosen correctly
- Gears & mechanisms that actually work
- Chassis design basics

3 · Electronics for Robotics

- Motor drivers, wired correctly
- Ultrasonic, IR & gyroscope sensors
- Power management that doesn't fry your board

4 · Programming for Robotics

- Arduino/Raspberry Pi programming
- Control logic for real robot behavior
- Sensor-actuator integration end to end

5 · Robot Operating System (ROS) Basics

- ROS architecture, explained clearly
- Nodes & topics in practice
- A first look at simulation with Gazebo

6 · Computer Vision for Robotics

- Camera integration on a robot platform
- Basic object detection for navigation
- Combining vision with control logic

7 · Autonomous Navigation Basics

- Line following, done reliably
- Obstacle avoidance strategies
- An introduction to path planning

Tools and Softwares You Can Work With

Ar Arduino | RP Raspberry Pi | ROS ROS | OC OpenCV | Ga Gazebo | Ul Ultrasonic/IR Sensors

Capstone Projects

Six builds that turn coursework into a portfolio — 1 of 2

1 · Line-Following Robot

A sensor-guided robot that follows a track autonomously.

SOFTWARE USED

Ar Arduino | IS IR sensors

- Calibrate line sensors for reliable tracking
- Tune control logic for smooth turns
- Handle track intersections/breaks

2 · Obstacle-Avoiding Robot

An ultrasonic-sensor robot that navigates around obstacles autonomously.

SOFTWARE USED

Ar Arduino | US ultrasonic sensors

- Detect obstacles reliably in real time
- Implement avoidance/re-routing logic
- Handle tight or cluttered spaces

3 · Robotic Arm for Pick-and-Place

A servo-driven arm that picks up and places objects on command.

SOFTWARE USED

AR Arduino/Raspberry Pi | Se servos

- Control multi-joint servo movement
- Calibrate for accurate positioning
- Sequence a full pick-and-place cycle

Capstone Projects

Six builds that turn coursework into a portfolio — 2 of 2

4 · Voice-Controlled Robot

A robot that executes movement commands from voice input.

SOFTWARE USED

RP Raspberry Pi | SR speech recognition

- Capture & parse voice commands
- Map commands to robot actions
- Handle command recognition errors gracefully

5 · Fire-Fighting Robot Prototype

A robot that detects and responds to a simulated fire source.

SOFTWARE USED

Ar Arduino | FS flame sensors

- Detect a flame source reliably
- Navigate toward the detected source
- Trigger a response action (e.g. fan/water)

6 · Autonomous Delivery Bot (Simulation)

A path-planning delivery robot tested in a simulated environment.

SOFTWARE USED

ROS ROS | Ga Gazebo

- Simulate a delivery environment
- Implement basic path planning
- Handle simulated obstacles along the route

A Day in the Role

What a Robotics Engineer's Day Actually Looks Like

- Assemble & wire a robot platform
- Write & test control/navigation code
- Calibrate sensors against real conditions
- Debug mechanical & electrical failures
- Test the robot in realistic environments
- Iterate design based on field performance

> **The throughline:** every capstone in this brochure is a smaller version of one of these responsibilities — so the portfolio you leave with maps directly to the job you're training for.

Career Outlook

Where a robotics skill-set actually leads

Robotics hiring spans manufacturing automation, logistics, agriculture, and defense — and the shortage of engineers who can work across mechanical, electrical, and software layers keeps demand high.

Role	What They Do	Salary Range (Fresher / Experienced)
Robotics Engineer	Designs & builds robotic systems	₹5–9 LPA / ₹12–22 LPA
Automation Engineer	Builds automated systems for manufacturing	₹5–8 LPA / ₹11–20 LPA
Robotics Software Engineer	Writes control & navigation software for robots	₹6–10 LPA / ₹14–24 LPA
Mechatronics Engineer	Works across mechanical & electronic robot systems	₹5–8 LPA / ₹11–20 LPA
Robotics Research Associate	Supports R&D on next-gen robotic systems	₹5–9 LPA / ₹13–24 LPA
Field Robotics Engineer	Deploys & maintains robots on-site	₹5–8 LPA / ₹11–20 LPA

Indicative ranges from general India market trends — validate against current job-board data before publishing.

Companies Actively Hiring in This Space

Bo Bosch · Si Siemens · TCS TCS · LT L&T · ABB ABB · TM Tata Motors

Representative employers in this space — not confirmed UrbanScholar hiring partners.

Program Tracks

Two tracks, same curriculum depth — the difference is placement intensity

KICKSTART

- 14+ hrs live cohort + recorded lectures
- 2 guided projects
- 6 months LMS access
- QR-verified completion certificate
- Mentor support — SLA ≤ 48 hrs
- Resume building workshop
- Mock aptitude test
- Pre-placement orientation session

CAREER

- 20+ hrs live cohort + recorded lectures
- 2 projects + capstone (Minor + Major)
- 6 months LMS access, extendable till placed
- QR-verified + Industry-Readiness certification
- Priority mentor support — SLA ≤ 24 hrs
- Resume + LinkedIn profile building
- 1-on-1 mock interviews with feedback
- Active placement & referral assistance

Common to Both Tracks

All 7 Curriculum Modules

All 6 Capstone Projects

Mentor-Reviewed Checkpoints

Training + Internship Certificate

Where UrbanScholar Robotics Learners Can Head

Manufacturing & Automation Firms

Logistics & Warehousing

AgriTech & Defense

Robotics Startups

Freelance / Independent Consulting

Placement Journey

How career support is woven through the program, not tacked on at the end

1

Build Foundation

Resume & LinkedIn built around real project outcomes, not generic templates.

2

Sharpen Aptitude

Structured aptitude & reasoning practice aligned to actual hiring-test formats.

3

Practice Interviews

Mock interviews with direct, specific feedback — not just a pass/fail score.

4

Get Placement Ready

Soft-skill coaching and, on the Career track, active referral support.

Why this order matters: most programs bolt placement prep onto the last week. Here it runs in parallel with the technical modules, so by the time your capstones are done, your resume and interview readiness are already in place — not started from scratch.

Quick Questions

Do I need prior background to start?

Some familiarity helps, but the early modules — starting with Robotics Fundamentals — rebuild the fundamentals from the ground up.

What happens if I fall behind a session?

Every live session is recorded, and mentor SLA windows exist specifically to help you catch up between checkpoints.

Can I switch tracks mid-program?

Yes — Kickstart learners can upgrade to Career at any point by paying the difference, carrying forward completed modules.

Is the certificate recognized by employers?

It's a QR-verified training + internship certificate — employers can verify authenticity directly, not just take it on faith.

UrbanScholar

Industry-Trained. Project-Proven. Career-Ready.

Get In Touch

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PROGRAM

Robotics — Kickstart & Career Tracks