Training Course on Robotics and Automation for Smallholder Farmer Empowerment

Professional Development Training Course Outline

Category	Agriculture	**Duration**	10 Days
Base Fee	$3,000 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

In today's rapidly evolving agricultural landscape, robotics and automation are becoming essential tools for boosting productivity, sustainability, and efficiency—especially for smallholder farmers. As the global demand for food increases and labor shortages persist, the integration of agritech solutions, such as smart irrigation, autonomous weeding systems, precision planting, and drone-based monitoring, is transforming farming into a high-tech profession. Training Course on Robotics and Automation for Smallholder Farmer Empowerment is designed to equip farmers, extension officers, and agribusiness leaders with the technical skills and strategic insights needed to harness robotics and automation for improved yields, reduced input costs, and climate-smart farming practices.

The course provides hands-on training, case studies, and real-world applications that demonstrate how affordable automation and smart farming tools can be practically applied to small-scale farms. With a strong focus on empowerment, capacity building, and digital inclusion, this training ensures participants are prepared to adopt and scale technologies that promote sustainable agricultural practices, financial resilience, and food security in rural communities.

Programme Curriculum

Training Course on Robotics and Automation for Smallholder Farmer Empowerment

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Course Objectives

1. Understand the fundamentals of agricultural robotics and its role in smart farming.
2. Explore automation tools that enhance productivity in smallholder systems.
3. Apply precision agriculture techniques using robotics.
4. Promote climate-smart agriculture through automation solutions.
5. Train farmers on the use of drones for crop monitoring and surveillance.
6. Introduce low-cost autonomous machinery adapted for small-scale farms.
7. Strengthen digital literacy in robotic technology applications.
8. Demonstrate AI-based decision-making for field operations.
9. Foster adoption of IoT sensors for soil and environmental data.
10. Enable integration of automated irrigation and fertilization systems.
11. Evaluate the economic feasibility of automation for smallholders.
12. Develop strategies for scaling smart farming innovations.
13. Support women and youth in agribusiness tech adoption.

Target Audiences

1. Smallholder farmers
2. Agricultural extension officers
3. Agribusiness startups
4. Rural youth innovators
5. Government agricultural officers
6. NGOs in agricultural development
7. Agricultural engineers and technicians
8. Women in agribusiness

Course Duration: 10 days

Course Modules

Module 1: Introduction to Agricultural Robotics

- Basics of robotics in farming
- Evolution of automation in agriculture
- Key components of farm robots
- Benefits and limitations
- Adoption challenges in rural settings
- **Case Study:** India’s NAARM robotic kits for small farmers

Module 2: Precision Farming Techniques

- GPS-based farming systems
- Sensor-based soil monitoring
- Yield mapping
- Data-driven decision-making
- Tools for small plots
- **Case Study:** Precision farming in Kenya’s maize fields

Module 3: Drones and Aerial Surveillance

- Drone types and functions
- Crop health monitoring
- Mapping and imaging tools
- Legal considerations
- Farmer training and certification
- **Case Study:** Rwanda's Zipline drone system for agriculture

Module 4: Autonomous Tractors and Ploughing Machines

- Functionality and affordability
- Programming basic paths
- Integration with other tools
- Fuel vs. electric options
- Safety measures
- **Case Study:** Farmtrac's electric tractor in smallholder fields

Module 5: Smart Irrigation and Water Management

- IoT sensors for soil moisture
- Automated drip systems
- Climate-based scheduling
- Mobile app control
- Resource savings benefits
- **Case Study:** Tunisia's solar-powered irrigation automation

Module 6: Robotics in Pest and Weed Control

- Vision-guided weeders
- Precision pesticide sprayers
- Safe handling procedures
- Impact on yield
- Health and environment implications
- **Case Study:** Tanzania's AI-powered weeding bots

Module 7: Post-Harvest Automation

- Robotic harvesters
- Automated grading and sorting
- Storage monitoring tech
- Packaging robotics
- Quality assurance systems
- **Case Study:** Thailand's cassava sorting robot for smallholders

Module 8: Greenhouse Automation Systems

- Climate control systems
- Nutrient dosing robots
- Ventilation and lighting control
- Sensors and alert systems
- Power supply solutions
- **Case Study:** Urban greenhouses in Lagos with full automation

Module 9: AI and Machine Learning in Agriculture

- Predictive analytics
- Disease identification

- Pattern recognition in crop cycles
- Decision support systems
- Integration with mobile devices
- **Case Study:** IBM's Watson in smallholder rice production in India

Module 10: IoT and Data Collection Tools

- Remote sensing networks
- Real-time dashboards
- Soil and weather data logs
- Mobile alerts
- Maintenance and calibration
- **Case Study:** IoT-based cocoa farming in Ghana

Module 11: Digital Literacy for Farmers

- Basic tech training
- Using mobile platforms
- Accessing farm data
- Troubleshooting common issues
- Building confidence with tech
- **Case Study:** Uganda's digital farmer schools

Module 12: Gender and Youth Inclusion in Agritech

- Bridging the digital divide
- Tailored training modules
- Entrepreneurship in agritech
- Youth-driven innovations
- Creating safe tech spaces
- **Case Study:** SheFarms: Robotics access for rural women in Nigeria

Module 13: Financing Robotics and Automation

- Cost-benefit analysis
- Sources of agri-finance
- Government subsidies
- Private sector partnerships
- Leasing vs. ownership models
- **Case Study:** Ethiopian cooperative finance for smart tools

Module 14: Sustainability and Environmental Impact

- Reducing chemical use
- Optimizing land and water
- Reducing labor exploitation
- Reducing carbon emissions
- Promoting eco-friendly machinery
- **Case Study:** Organic farming automation in Vietnam

Module 15: Scaling and Policy Integration

- Frameworks for national adoption
- Policy advocacy and planning
- Local manufacturing options
- Standardization and safety

- Farmer cooperatives
- **Case Study:** Brazil's national smart farming policy pilot

Training Methodology

- Hands-on demonstrations of robotic equipment
- Field visits and farm-based simulations
- Expert-led interactive lectures and Q&A sessions
- Use of videos and virtual reality models for tech visualization
- Group work and real-time data analysis exercises
- Capstone project involving design of a custom automation plan

Register as a group from 3 participants for a Discount

Send us an email: info@fineskilltrainingcenter.org or call *+254769199797*

Certification

Upon successful completion of this training, participants will be issued with a globally- recognized certificate.

Tailor-Made Course

We also offer tailor-made courses based on your needs.

Key Notes

a. The participant must be conversant with English.

b. Upon completion of training the participant will be issued with an Authorized Training Certificate

c. Course duration is flexible and the contents can be modified to fit any number of days.

d. The course fee includes facilitation training materials, 2 coffee breaks, buffet lunch and A Certificate upon successful completion of Training.

e. One-year post-training support Consultation and Coaching provided after the course.

f. Payment should be done at least a week before commence of the training, to Fineskill Training Center account, as indicated in the invoice so as to enable us prepare better for you.

Upcoming Scheduled Sessions

Start Date	End Date	Location	Price
23 Nov 2026	04 Dec 2026	Online	$2,000
23 Nov 2026	04 Dec 2026	Physical	$3,000
23 Nov 2026	04 Dec 2026	Physical	$6,000
23 Nov 2026	04 Dec 2026	Physical	$6,000

Start Date	End Date	Location	Price
23 Nov 2026	04 Dec 2026	Physical	$12,000
23 Nov 2026	04 Dec 2026	Physical	$9,000
23 Nov 2026	04 Dec 2026	Physical	$12,000
23 Nov 2026	04 Dec 2026	Physical	$12,000

Ready to enroll or request a customized program? Book online or contact us:

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