Training Course on Farm Automation and Robotics for Modern Agricultural Operations

Professional Development Training Course Outline

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

Course Introduction

Training Course on Farm Automation and Robotics for Modern Agricultural Operations is designed to equip participants with hands-on knowledge, technical skills, and strategic insights into emerging agri-tech innovations transforming traditional farming practices. With the agricultural sector embracing smart farming technologies, precision agriculture, and robotic automation, this course bridges the gap between conventional farm management and cutting-edge digital transformation in agriculture. As climate challenges and labor shortages pressurize productivity, automation in agriculture emerges as a game-changing solution for sustainability, efficiency, and yield optimization.

This comprehensive course leverages AI-driven robotics, IoT in agriculture, drone technology, sensor-based irrigation, and data-driven decision-making tools to modernize farm operations. Designed for a wide range of agri-stakeholders, the course provides detailed modules enriched with real-world case studies, practical applications, and field-based strategies to ensure immediate relevance and application. Participants will explore how agricultural automation can boost profitability, reduce operational costs, and empower resilient and scalable farming systems.

Programme Curriculum

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Course Objectives

1. Understand the fundamentals of farm automation and robotics in modern agriculture.
2. Learn the role of AI and machine learning in precision farming.
3. Apply sensor technology and IoT for real-time agricultural monitoring.
4. Utilize drones and UAVs for crop surveillance and mapping.
5. Explore automated irrigation systems for water-efficient farming.
6. Analyze robotic harvesting technologies and machinery.
7. Integrate data analytics into farm planning and decision-making.
8. Examine the benefits of smart greenhouse systems.
9. Identify trends in autonomous tractors and agricultural vehicles.
10. Evaluate the economic impact of agri-tech adoption.
11. Learn about climate-smart farming solutions through automation.
12. Understand blockchain and traceability in food production.
13. Develop strategies for implementing sustainable agri-robotics in diverse contexts.

Target Audiences

1. Agricultural engineers and technicians
2. Agribusiness entrepreneurs and investors
3. Farmers and farm managers
4. Agricultural extension officers
5. Smart farming solution providers
6. Agri-policy makers and government officials
7. Students and researchers in agricultural technology
8. NGOs and organizations focused on food security and sustainability

Course Duration: 10 days

Course Modules

Module 1: Introduction to Agricultural Automation and Robotics

- Definition and evolution of farm automation
- Benefits and challenges of integrating robotics
- Current trends in global agricultural robotics
- Role of digital transformation in agriculture
- Overview of robotic equipment and systems
- **Case Study:** John Deere’s autonomous tractor innovation

Module 2: Artificial Intelligence and Machine Learning in Agriculture

- AI models for crop prediction and disease detection
- Machine learning in precision seeding and fertilization
- Use of computer vision in agri-robots
- AI for weather forecasting and risk assessment
- Deep learning for soil health analysis
- **Case Study:** Blue River Technology’s “See & Spray” AI system

Module 3: IoT and Smart Sensor Networks in Farming

- Introduction to agricultural IoT systems
- Wireless sensor networks for crop monitoring
- Integration of IoT in greenhouse management
- Smart pest detection systems
- Data communication and cloud platforms
- **Case Study:** SmartFarmNet: IoT-based yield improvement project

Module 4: Drone Technology in Precision Agriculture

- Types of drones used in agriculture
- Aerial imaging and mapping techniques
- Drone-based spraying and fertilization
- Benefits and ROI of drone adoption
- Legal and safety considerations for drone usage
- **Case Study:** DJI’s Phantom series in rice farming optimization

Module 5: Automated Irrigation and Water Management

- Basics of smart irrigation systems
- Drip vs. sprinkler automation
- Integration with soil moisture sensors
- Real-time irrigation scheduling using AI
- Water use efficiency strategies
- **Case Study:** Netafim’s smart irrigation success in India

Module 6: Robotics in Harvesting and Post-Harvest Management

- Robotic fruit and vegetable harvesters
- Automation in packing and sorting
- Labor cost reduction through automation
- Sensor-guided precision picking
- Safety and ethics in robotic harvesting
- **Case Study:** Octinion’s strawberry picking robot in Belgium

Module 7: Smart Greenhouse and Controlled Environment Agriculture

- Principles of controlled environment farming
- Automated climate control systems
- Sensor-based lighting and CO? management
- Robotics in indoor vertical farming
- Benefits in urban and peri-urban settings
- **Case Study:** Iron Ox’s fully robotic greenhouse system

Module 8: Autonomous Vehicles and Tractors

- Types of autonomous farm vehicles
- GPS and LiDAR technologies in tractors
- Driverless plowing and planting operations
- Inter-vehicle communication systems
- Maintenance and cost-efficiency
- **Case Study:** CNH Industrial's self-driving tractor trials

Module 9: Data Analytics and Farm Management Software

- Data collection and dashboarding tools

- Precision field mapping and forecasting
- Predictive analytics in yield improvement
- Digital twin applications in agriculture
- Software integration for multisource data
- **Case Study:** Climate FieldView platform used by corn farmers

Module 10: Climate-Smart Farming with Automation

- Adaptive technologies for climate resilience
- Drought-tolerant automated systems
- Real-time climate response adjustments
- Robotics for conservation agriculture
- Sustainability reporting using automation data
- **Case Study:** AGCO's climate-resilient farming project in Africa

Module 11: Blockchain and Traceability in Smart Farming

- Importance of food supply chain traceability
- Blockchain architecture in agriculture
- Integration with automated record-keeping
- Enhancing trust in agricultural exports
- Blockchain and robotic logistics
- **Case Study:** IBM Food Trust and robotic warehouse logistics

Module 12: Financial Modeling for Agri-Tech Investments

- Cost-benefit analysis of automation
- ROI metrics and decision frameworks
- Access to financing and funding models
- Insurance models for robotic machinery
- Risk and uncertainty in smart tech adoption
- **Case Study:** Agrifund's success in financing robotic farms

Module 13: Cybersecurity in Automated Agricultural Systems

- Cyber risks in smart agriculture
- Protecting data from sensor networks
- Securing IoT-based irrigation systems
- Vulnerabilities in autonomous machinery
- Cyber hygiene for farm operators
- **Case Study:** Cyberattack on smart irrigation systems in Israel

Module 14: Capacity Building and Workforce Transformation

- Training needs in modern agri-tech
- Upskilling rural laborers for robotic operations
- Gender inclusion in farm automation
- Youth engagement in smart farming
- Curriculum design for tech-based agronomy
- **Case Study:** Youth Empowerment in Precision Agriculture – Kenya

Module 15: Policy, Ethics, and Sustainability in Farm Automation

- Global regulatory trends for robotics in agriculture
- Ethical considerations of replacing labor
- Sustainability certification and compliance

- Public-private partnerships for smart farming
- National strategies for agri-innovation adoption
- **Case Study:** EU's agri-robotics policy impact in smallholder farms

Training Methodology

- Interactive expert-led lectures and live demonstrations
- Hands-on field simulations using robotics and automation tools
- Group discussions and collaborative problem-solving tasks
- Real-world case study analysis from global agri-tech leaders
- Access to online learning platforms and resource repositories
- Participant-led innovation project presentations

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

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

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