Training Course on Next-Generation Weather Forecasting for Precision Farming

Professional Development Training Course Outline

Category	Agriculture	**Duration**	5 Days
Base Fee	$1,500 USD	**Delivery Mode**	Online / On-site Hybrid

Course Introduction

As climate patterns grow more unpredictable and agriculture faces increasing pressure to optimize yields, next-generation weather forecasting has become a transformative tool in precision farming. Training Course on Next-Generation Weather Forecasting for Precision Farming is designed to bridge the gap between traditional farming practices and data-driven decision-making by equipping stakeholders with advanced tools in climate-smart agriculture, satellite weather analytics, and AI-based forecasting models. Participants will gain practical insights into interpreting weather data for real-time decision-making that reduces risks, enhances productivity, and supports sustainable farming systems.

With a rising global demand for food security, integrating cutting-edge technologies like IoT in agriculture, hyperlocal weather forecasting, and GIS-based crop planning has never been more critical. This course will explore the synergy between big data and agronomic practices, showcasing how accurate weather predictions can influence irrigation, fertilization, pest control, and harvest timing. Participants will benefit from expert-led case studies, hands-on forecasting tools, and actionable strategies tailored to diverse agricultural landscapes.

Programme Curriculum

Training Course on Next-Generation Weather Forecasting for Precision Farming

Introduction

As climate patterns grow more unpredictable and agriculture faces increasing pressure to optimize yields, next-generation weather forecasting has become a transformative tool in precision farming. Training Course on Next-Generation Weather Forecasting for Precision Farming is designed to bridge the gap between traditional farming practices and data-driven decision-making by equipping stakeholders with advanced tools in climate-smart agriculture, satellite weather analytics, and AI-based forecasting models. Participants will gain practical insights into interpreting weather data for real-time decision-making that reduces risks, enhances productivity, and supports sustainable farming systems.

With a rising global demand for food security, integrating cutting-edge technologies like IoT in agriculture, hyperlocal weather forecasting, and GIS-based crop planning has never been more critical. This course will explore the synergy between big data and agronomic practices, showcasing how accurate weather predictions can influence irrigation, fertilization, pest control, and harvest timing. Participants will benefit from expert-led case studies, hands-on forecasting tools, and actionable strategies tailored to diverse agricultural landscapes.

Course Objectives

1. Understand the fundamentals of precision agriculture and weather-smart farming.
2. Learn to interpret AI-based weather forecasting models for crop management.
3. Integrate hyperlocal meteorological data into farm decision-making.
4. Use geospatial technologies and GIS tools for field-specific forecasting.
5. Apply IoT sensors to monitor climate conditions in real time.
6. Evaluate the role of climate analytics in reducing crop failure risks.
7. Develop data-driven strategies for irrigation and fertilization scheduling.
8. Implement early warning systems for pests and disease outbreaks.
9. Explore remote sensing tools for climate variability tracking.
10. Assess the impact of climate change on crop yield patterns.
11. Utilize predictive modeling tools for farm-level planning.
12. Analyze case studies of successful weather-informed farming operations.
13. Build actionable frameworks for sustainable and resilient agriculture.

Target Audiences

1. Farmers & Agripreneurs
2. Agricultural Extension Officers
3. Climate Scientists & Meteorologists
4. AgriTech Companies
5. Government & Policy Planners
6. Agricultural Educators & Trainers
7. Students in Agricultural Sciences
8. NGOs & Development Agencies in Agriculture

Course Duration: 5 days

Course Modules

Module 1: Introduction to Precision Farming & Climate Interlinkages

- Overview of precision agriculture principles
- Understanding weather's role in crop productivity
- Key climate variables affecting farm operations
- Technological evolution in agrometeorology
- Introduction to real-time forecasting tools
- **Case Study:** Climate-smart farming success in Kenya’s maize belt

Module 2: Meteorological Data and Forecasting Technologies

- Types of weather data and their sources
- Satellite-based weather monitoring systems
- Interpreting agro-meteorological charts
- Accuracy and limitations in forecasting
- Tools for short- and long-term predictions
- **Case Study:** Use of NOAA data for rice farming in Bangladesh

Module 3: AI, Machine Learning & Predictive Analytics in Weather Forecasting

- Introduction to AI and ML in agri-weather analytics
- Using historical data to forecast yield/weather patterns
- Developing AI-driven decision support systems
- Integrating AI outputs with agronomic practices
- Risk modeling and forecasting accuracy
- **Case Study:** IBM Watson Decision Platform in U.S. soybean farms

Module 4: GIS and Remote Sensing for Agricultural Weather Insights

- Fundamentals of GIS in agriculture
- Mapping weather risks using satellite imagery
- Real-time crop health monitoring
- Layering weather with soil and crop data
- GIS-based decision making in field planning
- **Case Study:** GIS-based drought response in Ethiopian sorghum zones

Module 5: Smart Tools and IoT Integration for Field-Level Forecasting

- Role of sensors in weather data collection
- IoT devices for soil moisture, temperature, humidity
- Data transmission and cloud-based analysis
- Mobile apps for forecast delivery
- Automation of irrigation/fertilization systems
- **Case Study:** IoT-led greenhouse management in Netherlands

Module 6: Climate Change Adaptation & Resilience Strategies

- Climate change impact on regional agriculture
- Adaptive practices based on forecast data
- Diversifying cropping systems for resilience
- Policy support and risk mitigation frameworks
- Engaging communities in forecast-based planning
- **Case Study:** Climate-resilient millet farming in Rajasthan, India

Module 7: Weather-Based Crop Management

- Crop calendars and seasonal weather patterns
- Pest and disease outbreak forecasting
- Tailoring fertilization and irrigation to forecasts
- Emergency harvest and storage strategies
- Integration with farm management software
- **Case Study:** Weather-triggered pest alert system in Brazil

Module 8: Building Farm-Level Forecasting Capacity

- Training farmers to interpret weather data
- Creating community-based weather centers
- Government and private partnerships in forecasting
- Open-source tools and datasets
- Business models for weather services in agri-markets
- **Case Study:** Community weather stations in Uganda’s coffee sector

Training Methodology

- Expert-led lectures with interactive presentations

- Practical hands-on sessions using forecasting tools
- Field-based case simulations and group activities
- Access to cloud-based weather datasets and IoT demos
- Post-training mentorship and e-learning portal

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
21 Sep 2026	25 Sep 2026	Online	$1,000
21 Sep 2026	25 Sep 2026	Physical	$1,500
21 Sep 2026	25 Sep 2026	Physical	$0
21 Sep 2026	25 Sep 2026	Physical	$0
21 Sep 2026	25 Sep 2026	Physical	$0
21 Sep 2026	25 Sep 2026	Physical	$0
21 Sep 2026	25 Sep 2026	Physical	$0

Start Date	End Date	Location	Price
21 Sep 2026	25 Sep 2026	Physical	$0

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

Register Online Now

Email: info@fineskilltrainingcenter.com | Website: www.fineskilltrainingcenter.com