Training Course on Precision Livestock Farming (PLF) using Sensors and AI

Professional Development Training Course Outline

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

Course Introduction

Precision Livestock Farming (PLF) using Sensors and Artificial Intelligence (AI) is revolutionizing modern animal husbandry by optimizing productivity, enhancing animal welfare, and improving resource efficiency. Through advanced monitoring technologies, farmers gain real-time insights into animal health, behavior, nutrition, and environmental conditions. With the integration of AI algorithms, predictive analytics, and smart decision-making tools, PLF enables data-driven interventions that reduce costs, minimize risks, and increase sustainability in livestock systems.

Training Course on Precision Livestock Farming (PLF) using Sensors and AI aims to empower participants with hands-on knowledge and skills in sensor integration, big data analytics, and intelligent livestock management. From IoT-based monitoring to machine learning-driven health alerts, trainees will explore innovative solutions tailored for dairy, poultry, swine, and ruminant sectors. The course content aligns with global trends in smart agriculture, sustainability, and food security.

Programme Curriculum

Training Course on Precision Livestock Farming (PLF) using Sensors and AI

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Course Objectives

1. Understand the fundamentals of Precision Livestock Farming (PLF) technologies.
2. Explore the integration of sensors and AI in animal health monitoring.
3. Develop skills in IoT-enabled livestock data collection and analysis.
4. Implement real-time monitoring systems for animal behavior and welfare.
5. Evaluate environmental and climate impact mitigation using smart farming tools.
6. Learn about cloud computing and data security in PLF systems.
7. Apply AI models for predictive diagnostics and decision support.
8. Design and maintain automated feeding and milking systems.
9. Analyze economic benefits and return on investment of PLF.
10. Use computer vision and drones for livestock tracking and counting.
11. Build dashboards for visualizing livestock performance metrics.
12. Address ethical, legal, and data privacy challenges in PLF.
13. Explore emerging trends such as blockchain and robotics in livestock farming.

Target Audiences

1. Livestock farm owners and managers
2. Veterinarians and animal health professionals
3. Agricultural extension officers
4. Smart farming startups and tech developers
5. Government and policy makers in agriculture
6. Agriculture and veterinary students
7. Feed and equipment suppliers
8. Researchers in livestock technology

Course Duration: 10 days

Course Modules

Module 1: Introduction to Precision Livestock Farming

- Definition, scope, and global trends
- Benefits of adopting PLF systems
- Overview of AI and sensor technologies
- Types of livestock supported
- Role in climate-smart agriculture
- **Case Study:** Netherlands' national PLF strategy

Module 2: IoT in Livestock Monitoring

- Sensor types (RFID, GPS, temperature, heart rate)
- Data collection frameworks
- Wireless connectivity and cloud storage
- Energy-efficient sensors
- Limitations and best practices
- **Case Study:** IoT collar technology for dairy cows

Module 3: Animal Health and Disease Detection

- Early disease detection with AI
- Wearable sensor alerts
- Automated temperature and respiration tracking
- Data-driven vaccination schedules
- Risk prediction models
- **Case Study:** AI diagnosis in swine flu outbreaks

Module 4: Feeding Optimization Using AI

- Smart feeding systems
- AI-driven feed formulation
- Monitoring feed intake behavior
- Reducing feed waste through automation
- Enhancing nutrition through data
- **Case Study:** AI-controlled feeding in poultry

Module 5: Behavior and Welfare Monitoring

- Tracking movement and social interaction
- Identifying stress, lameness, and aggression
- Behavioral pattern recognition
- AI in estrus detection
- Welfare scoring systems
- **Case Study:** Cattle comfort monitoring in Canada

Module 6: Reproductive Management Tools

- Estrus and calving prediction
- Hormone level analysis via biosensors
- Breeding timing optimization
- Automated insemination alerts
- AI-assisted reproductive planning
- **Case Study:** ReproScan and herd fertility in Australia

Module 7: Milking Automation

- Robotic milking machines
- AI in milk quality analysis
- Data-driven yield tracking
- Maintenance of milking systems
- Hygiene and safety protocols
- **Case Study:** Lely Astronaut in large-scale dairy farms

Module 8: Precision Grazing and Pasture Management

- Smart fencing and movement control
- Satellite and drone mapping
- AI in pasture growth forecasting
- Water point monitoring
- Integrating crop-livestock data
- **Case Study:** New Zealand e-pasture systems

Module 9: Climate Control and Housing Systems

- Sensors for temperature, humidity, and ventilation

- Automated housing adjustments
- AI for thermal stress detection
- Reducing emissions from barns
- Energy-efficient infrastructure
- **Case Study:** Smart barns in Germany

Module 10: Computer Vision and Imaging Analytics

- Camera-based livestock monitoring
- Visual disease detection
- Facial and body recognition systems
- Thermal imaging for fever detection
- AI video analysis platforms
- **Case Study:** Vision-based pig weight estimation

Module 11: Economic and ROI Analysis

- Cost-benefit evaluation
- Investment and funding sources
- Yield and productivity increase
- Financial modeling of PLF systems
- Adoption barriers and solutions
- **Case Study:** ROI in smart poultry farms in Kenya

Module 12: Data Management and Visualization

- Building dashboards and analytics tools
- Data governance and storage policies
- Interpreting sensor data
- Real-time alerts and notifications
- AI data cleaning techniques
- **Case Study:** Livestock Insight dashboards in the USA

Module 13: Legal and Ethical Considerations

- Animal data ownership and privacy
- Regulatory frameworks
- Bioethics in AI decisions
- Informed consent and transparency
- Cultural impacts on AI adoption
- **Case Study:** GDPR compliance in EU animal tracking

Module 14: Future Technologies in PLF

- Blockchain for traceability
- Robotics in animal care
- Quantum computing in genetics
- Augmented reality in farm training
- Cross-innovation with aquaculture
- **Case Study:** Israeli startup with integrated AI-robotics

Module 15: Project Implementation and Scaling

- Needs assessment and planning
- Pilot testing and system integration
- Scaling strategies for smallholders

- Maintenance and upgrade planning
- Stakeholder engagement and feedback
- **Case Study:** PLF scaling model for African cooperatives

Training Methodology

- Interactive lectures with multimedia presentations
- Real-time sensor and AI tool demonstrations
- Hands-on practical sessions and data analysis workshops
- Group discussions and industry expert panels
- Capstone projects and evaluation through case studies

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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