

**SAVITRIBAI PHULE  
PUNE UNIVERSITY  
(Formerly University of Pune)**



**DRONEACHARYA  
AERIAL INNOVATIONS  
LIMITED**



**Board of Studies,  
Department of Technology**

**Electronics & Electrical (EE) Technology**

**Curriculum Structure for  
Professional Certification Programme**

**in**

**CERTIFICATE COURSE FOR DRONES IN AGRICULTURE**

**Course Name: Professional Certification Programme in**

**CERTIFICATE COURSE FOR DRONES IN AGRICULTURE**

**Compulsory Modules – 2**

**Duration: 5 DAYS**

**Course Intake: - 40**

**Course Mode: - Classroom (Hybrid)**

**Eligibility Criteria:**

**10th Pass**

**Education Background:- Should able to read, Understand & write English/Hindi**

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**Curriculum Structure for Professional Certification**

**Programme in**

**CERTIFICATE COURSE FOR DRONES IN AGRICULTURE**

<b>Sr. No.</b>	<b>Subject Code</b>	<b>Subject Name</b>	<b>Credits</b>	<b>Teaching Scheme (Theory)</b>	<b>Teaching Scheme (Practical)</b>
1	<b>CCDA1</b>	FUNDAMENTALS OF DRONES AND USAGE IN AGRICULTURE	1	√	√
2	<b>CCDA2</b>	SIMULATOR AND FLYING SESSION	2		√
		<b>Total Course Credits</b>	<b>3</b>		

## **TAKEAWAYS AFTER COMPLETION OF (CCDA) COURSE**

**Upon completing a course on drones in agriculture, participants will have gained a comprehensive comprehension of how drone technology can revolutionize modern farming practices. They will be equipped with the knowledge and abilities required to deploy drones effectively for a variety of agricultural applications, including crop monitoring, precision agriculture, pest control, and irrigation management. Learners will be proficient in using drones to collect and analyze data, enabling data-driven decisions for reducing resource waste, and increasing overall farm productivity. They will also be familiar with the regulatory and safety considerations unique to agricultural drone use. Participants will ultimately be able to implement drone technology as a valuable instrument in modern agriculture, thereby improving the efficiency, sustainability, and profitability of agricultural operations.**

## CCDA1 : FUNDAMENTALS OF DRONES AND USAGE IN AGRICULTURE

### Learning Outcomes

**This includes giving students a solid foundation in both drone technology and its agricultural applications. Students will acquire a comprehensive understanding of agriculturally relevant drone components, flight principles, and regulatory frameworks. This will enable them to capture and analyze valuable data for precision agriculture. Students will also learn how to incorporate drone technology into farm management practices, optimize resource utilization, and make informed decisions to increase crop yields and sustainability. At the conclusion of the course, participants should be well-equipped to harness the potential of drones as a transformative instrument in contemporary agriculture, contributing to increased efficiency and productivity while minimizing environmental impact.**

### Syllabus

**Introduction of Drones:** Introduction, Types of drones, Application, Future scope.

**DGCA Rules & Regulation:** Preliminary Classification, Authorization & Regulation Operation of UAS, Unmanned Air Traffic Control, Management General.

**Drone Terminology and Physics:** Introduction, Basic controls, Free flying.

**Drones in Agriculture:** Introduction Flight checklist Demo flying.

**Future of Farming:** Variable rate application Purpose of using Drones in Farming, Softwares Farming Methods, Human risk and Errors, Results.

**Fixed Wing UAV Type, of Industrial Drones in Agriculture, Flight Softwares, Controls, Plannings.**

**Crop Inspection Methods:** Crop Insurance, Inspection Methods, Softwares, Land use Pattern.

**Crop Health Monitoring and Irrigation plan:** Working Principle, Types of Hardware, Types of Softwares, Mission plan Multispectral Drone Data Processing, Crop Health Analysis - Generating Vegetation Indices using Multispectral Drone Data Report.

**Pest Control and Yield Improvement:** General Procedure, Transmission Technique Hardwares, Softwares.

**Introduction of UAV Equipment:** Mission Planning of Field, Operational methods for different crops, Simulation Simulator flying, Introduction Basic controls, Operation Methods.

**Risk Management:** Hardware Failure, Payloads.

**UAV Emergency & identification Handling:** Risk Assessment, Phases of Risk Assessment, Identification & Handling.

## CCDA2 : SIMULATOR AND FLYING SESSION

### Learning Outcomes

This practical module is designed to equip students with a comprehensive set of skills necessary for success in precision agriculture. Students gain proficiency in piloting, emergency response, and mission planning in a risk-free virtual environment through simulator practice. The subsequent flying sessions provide hands-on experience deploying drones for actual agricultural duties, such as crop health assessments and pest management. Participants will learn how to effectively apply theoretical knowledge to dynamic farming scenarios, ensuring that they can operate drones with confidence and safety, collect and analyze agricultural data, and make informed decisions to optimize crop yields, reduce resource consumption, and promote sustainable farming practices. This training enables students to become valuable assets in the agriculture industry by enhancing farm efficiency, sustainability, and profitability with drone technology.

### Syllabus

**Simulator flying:** Basic controls Task flying .

**Simulator flying:** Recap, Basic controls Task flying ,Take off and landing.

**Take off and landing Field flying:** Basic controls Flight checklist, Field flying.

**Field flying:** Mission Plan, Methods of Monitoring, Field flying.

**Simulator flying:** Recap, Data capture analysis.

**Field flying:** Identification of Field, Flight Plan, Field Operations.

**Field flying:** Emergency Procedure, Recovery, Payload Setup Identifying risk and overcome solution while flying with critical situations.