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 IN FPV DRONE RACING

Course Name: Professional Certification Programme in

CERTIFICATE COURSE IN FPV DRONE RACING

Compulsory Modules – 2

Duration: 10 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 IN FPV DRONE RACING

Sr. No.	Subject Code	Subject Name	Credits	Teaching Scheme (Theory)	Teaching Scheme (Practical)
1	CCFDR1	FUNDAMENTALS OF DRONES & INTRODUCTION OF RACING SECTOR	1	√	√
2	CCFDR2	SIMULATOR AND FLYING SESSIONS	2		√
		Total Course Credits	3		

TAKEAWAYS AFTER COMPLETION OF (CCFDR) COURSE

The primary takeaway from a certificate programme in drone racing is a comprehensive skill set and a comprehensive comprehension of the exciting and competitive world of drone racing. Course participants will have the ability to construct, configure, and pilot racing drones, mastering flight techniques, obstacle navigation, and precise control. They will have acquired a deeper understanding of drone technology, aerodynamics, and racing strategies. Participants will also be well-versed in safety protocols and race event regulations. This course enables individuals to actively participate in the fast-paced and exhilarating sport of drone racing, fostering their passion for aerial sports and enhancing their ability to compete in enthralling drone racing competitions.

CCFDR1: FUNDAMENTALS OF DRONES & INTRODUCTION RACING SECTOR

Learning Outcomes

Students will gain an understanding of the numerous components that comprise a racing drone and how they affect performance. They will acquire an understanding of the sector's specific requirements and regulations, including racecourse design, safety guidelines, and competitive strategies. In addition, participants will develop a solid foundation in piloting skills, such as precise control, maneuvering techniques, and obstacle navigation, preparing them for entry into the thrilling world of drone racing with both technical and practical expertise. By the end of the course, students should not only be equipped to comprehend the fundamentals of drones, but also to engage in, appreciate, and potentially excel in the exciting sport of drone racing.

Syllabus

Introduction to drones in racing sector: What are drones, Types, Categories of drones, -Setup for racing drones.

Terminologies and physics of drones: How planes fly, Flying controls, Forces acting on a drone and fixed wing, Lift vs. related wind.

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

Component introduction and selection: Frame, ESC, Motor, Battery, Propeller, Flight controller, Vtx, Receiver and transmitter, Fpv goggles.

Soldering: Materials used, Theory of soldering, Practical session on soldering.

Assembly of Drone: Circuit diagram, Component assembly, Soldering.

CCFDR2: SIMULATOR AND FLYING SESSIONS

Learning Outcomes

The intended learning outcomes of simulator and flight sessions for FPV (First-Person View) racing drones are to equip participants with the skills and knowledge required to excel in the fast-paced and competitive world of FPV drone racing. Students will develop essential piloting skills, including precise control, fast reflexes, and effective FPV mode maneuvering, through simulator practice. They will gain experience navigating intricate racetracks, honing their ability to predict obstacles and make split-second decisions. Subsequent flying sessions provide participants with hands-on experience, enabling them to apply their simulator-acquired FPV racing skills to real-world scenarios, thereby augmenting their proficiency. Students should be able to confidently and safely operate FPV racing drones, participate in competitive races, and enjoy the exhilarating experience of FPV drone racing while adhering to safety protocols and event regulations by the conclusion of the training.

Syllabus

Simulator Session: Stabilized mode, Introduction, Controls, Demo,Takeoff, Landing, Turns, Task completion, Exam.

Practical Flying sessions- level 1: Introduction to UAS, Demo flight, basic controls, Smart square pattern, Lazy square pattern, Simulator Session- realflight, Demo, Takeoff, Landing, Turns, Task completion, Level completion, Exam.

Practical Flying sessions- level 2: Smart square pattern recap, Lazy square pattern recap, Circle pattern, Figure of 8 pattern, Point of interest pattern.

Simulator Session: Realflight software, Task completion, Level completion.

Simulator practice session: Revision, Task completion.

Practical Flying sessions- level 3: Circle pattern recap, Figure of 8 pattern recap, Point of interest pattern recap, Emergency recoveries, Advanced patterns, Practical test.