

**UAV & Quadcopter  
(Winter Training Program)  
4 Weeks/30 Days**

**“PRESENTED BY”**



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**An ISO 9001 : 2008 Certified Company**

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**INTERNATIONAL  
ACCREDITATION  
ORGANIZATION  
HOUSTON U.S.A.**

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# WINTER TRAINING PROGRAM

## UAV & QUADCOPTER

**Course Name** : UAV & Quadcopter  
**Certification** : By RoboSpecies Technologies Pvt. Ltd. Accredited by International Accreditation Organization, Houston, U.S.A.  
**Study Material** : Books & CDs Free to each participant  
**Robotics Toolkit** : Free to Each Participant

### Fees & Duration

1. For UAV & Quadcopter (**Advance**)  
**Fees** : ₹ 7990/- per candidate  
**Duration** : 30 Days/4 Weeks

Quadcopter Advance Module	
Days	Topics
Day 1	<ul style="list-style-type: none"><li>• Introduction to Aerodynamics</li><li>• What is pressure-velocity relation?</li><li>• Introduction to Thermodynamics</li><li>• Application and its uses in growing world.</li></ul>
Day 2	<ul style="list-style-type: none"><li>• What are Drones?</li><li>• Explanations of UAVs</li><li>• Application of Drones in various sectors</li><li>• Introduction to Quadcopter</li></ul>
Day 3	<ul style="list-style-type: none"><li>• Learning Basic electronics over breadboard</li><li>• Learning Analog and Digital I/O</li><li>• What are PWM signals?</li></ul>
Day 4	Project
Day 5	<ul style="list-style-type: none"><li>• Motor Control through programming</li><li>• How to control RPM of motors through PWM</li><li>• Learning concept behind Motor Driver Shield</li></ul>
Day 6	Project
Day 7	Project
Day 8	<ul style="list-style-type: none"><li>• Mechanics used in making Quadcopter</li><li>• Thrust generation relation with motor RPM is explained</li><li>• Balancing and Design of Quadcopter is elaborated</li></ul>

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Day 9	<ul style="list-style-type: none"> <li>• Design of any flying objects</li> <li>• What is theory behind Multi copter?</li> <li>• Why Quadcopter is most preferable.</li> </ul>
Day 10	<ul style="list-style-type: none"> <li>• Principle of Motors</li> <li>• How Brushless Motor Works?</li> <li>• What is the difference between common DC motors vs BLDC</li> <li>• Types of BLDC motors and its applications.</li> </ul>
Day 11	<ul style="list-style-type: none"> <li>• ESC(Electronic Speed Controller)</li> <li>• How ESC works?</li> <li>• What exactly it functions in any drone circuit?</li> <li>• Learning current and voltage rating.</li> </ul>
Day 12	<ul style="list-style-type: none"> <li>• Frames</li> <li>• Types of Frames</li> <li>• Importance of Frames</li> <li>• Properties of material</li> </ul>
Day 13	<ul style="list-style-type: none"> <li>• Battery Selection</li> <li>• <b>LI-PO</b>(lithium polymer battery)<b>NI-CD</b>(Nickel Cadmium Battery)</li> </ul>
Day 14	Project
Day 15	Project
Day 16	<ul style="list-style-type: none"> <li>• Concepts of artificial intelligence.</li> <li>• Microcontrollers and Microprocessor difference</li> <li>• Introduction to embedded system</li> <li>• Video sessions on advancements in Technology</li> <li>• Concepts of hardware and software interface</li> <li>• Different types of Sensors</li> <li>• Accelerometer</li> <li>• Gyro</li> <li>• Barometer</li> <li>• Different Microcontroller Boards</li> <li>• Different types of controllers</li> </ul>
Day 17	Introduction to Propellers <ul style="list-style-type: none"> <li>• Propellers demystified</li> <li>• Different types and sizes of propellers</li> <li>• Propellers used for Quadrotors</li> </ul>

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	<ul style="list-style-type: none"> <li>• Propellers with BLDC Motors</li> <li>• Propeller Balancing</li> </ul>
Day 18	<p>Introduction to KK 2.0 Quadcopter Controller Board</p> <ul style="list-style-type: none"> <li>• KK 2.0 Controller Board Explanation</li> <li>• Different Controller boards</li> <li>• Connections of ESC to KK 2.0</li> <li>• Calibration in KK 2.0</li> <li>• Safe and Armed mode explained</li> <li>• Self-Level Mode Explained</li> <li>• Tx-Rx Calibration with KK 2.0</li> </ul>
Day 19	PRACTICAL
Day 20	PRACTICAL
Day 21	<p>Introduction to 2.4Ghz TX RX</p> <ul style="list-style-type: none"> <li>• Transmitter used for Quadrotors</li> <li>• TX Rx Explained</li> <li>• Tx Rx connections with Controller Board</li> <li>• Checking null factor</li> <li>• Proper calibration</li> </ul>
Day 22	<ul style="list-style-type: none"> <li>• Final Calibrations and Testing</li> <li>• Weight Calibration</li> <li>• Center of Gravity checking</li> <li>• Checking connections</li> <li>• Selecting proper modes for flight</li> <li>• Safety Precautions</li> </ul>
Day 23	PRACTICAL
Day 25	PRACTICAL
Day 26	Completing Project Report Day 1
Day 27	Completing Project Report Day 2
Day 28	Discussion over other projects and Competition

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Day 29	Project Submission
Day 30	Doubt Discussion cum farewell

### Why UAV & Quadcopter Training from RoboSpecies Technologies?

1. **Lot of Major Projects** will be covered in this training.
  - 20+20 Projects are covered in BASIC Module
  - 20+20+20 Project are covered in ADVANCE Module
  - 9 optional major projects.
2. Our syllabus is professionally designed to cover **Basic** as well as **Advance** aspects of Embedded Systems & Robotics
3. Each day of our training is well planned to provide you the **Theoretical** as well as **Practical** Knowledge of the module
4. Each day will come up with **New Practical's & Projects** which makes the training interesting and exciting.
5. Time to time **Practical Assignments** will be provided to the students, which will help them in doing practice at home.
6. **Revision Time & Query Sessions** are provided to the students which help them in clearing their all previous doubts.
7. **Exam** will be conducted at the end of **basic** as well as **Advance** module to test the knowledge level of the students.
8. Time for **Project Work** will be provided to the students, in which students will develop a project of their own choice. This will encourage **Innovative Ideas** among students.

### Pre-Requisites

1. Basic knowledge of C\C++ Programming.
2. Basics of Electronics.
3. Eagerness to learn new innovative things.

### Who Could Attend this Training?

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- Students from B.E/B.Tech/M.Tech/Diploma (ECE/EEE/CSE/IT/MECH) can join this training.
- Anyone who have interest in this field and have pre-requisite knowledge