



**Robosapiens**<sup>TM</sup>  
**INDIA**

**Course & Kit Content  
Of  
Quadcopter & UAV**

Duration 7 Days

Kit Partner

**ROBOMART.com**

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Course Name : **QUADCOPTER & UAV**  
Certification : By Robosapiens Technologies Pvt. Ltd.  
Fee : 5900/- Only  
Toolkit : **FREE** to Each Participant

## **Detailed Course Content:**

### **1. Introduction to Multicopter**

- 1.1. Definition
- 1.2. History of Quadcopter
- 1.3. Difference between different types of Multicopter
- 1.4. Why Quadcopter
- 1.5. How Quadcopter works
- 1.6. Application of Quadcopter
- 1.7. Current Industrial Quadcopter
- 1.8. Future of Quadcopter

### **2. Anatomy of Quadcopter**

- 2.1. What are Basic Modules?
- 2.2. Why Need of Basic Modules
- 2.3. Operating Techniques
- 2.4. Constructional Techniques
- 2.5. Working Approach on Quadcopter.

### **3. Base of Multicopter**

- 3.1. Frame
- 3.2. Types of Frame
- 3.3. Frame Configuration
- 3.4. Propeller
- 3.5. History of Propeller
- 3.6. Theory and Designing of Propeller
- 3.7. Standard Propeller Size
- 3.8. Different forces acting on Propeller
- 3.9. Understanding Propeller Size and Control
- 3.10. Analysis of Propeller Pitch, Diameter and RPM

#### **4. Introduction to Sensors (Input Device)**

- 4.1. What is Sensor?
- 4.2. Various Industrial Sensors
- 4.3. Selection of Sensor
- 4.4. Use of Sensor in QuadCopter
- 4.5. Interfacing of Sensors
- 4.6. Basic working Technique of Sensor
- 4.7. Application of Sensor

#### **5. How to work on Educational & Engineering Level Actuator**

- 5.1. Types of Motors
- 5.2. Basic working concept of Motors
- 5.3. Difference between Brushed and Brushless DC motor
- 5.4. Characteristics of BLDC
- 5.5. Advantages of BLDC
- 5.6. Applications of BLDC
- 5.7. Theory of operation of BLDC
- 5.8. Different Phase BLDC Motor
- 5.9. Evaluation of BLDC.

#### **6. Electronic Speed Controller (ESC)**

- 6.1. Features
- 6.2. Working
- 6.3. Pulse Width Modulation
- 6.4. Interfacing of ESCs
- 6.5. Start up Procedures
- 6.6. Protection Methods
- 6.7. Trouble Shooting.

#### **7. Introduction to Flight Controller Board**

- 7.1. What is Computational Device?
- 7.2. Transistor
- 7.3. Logic Gates
- 7.4. Difference between Microcontroller and Microprocessor.
- 7.5. Microcontroller Architecture and Interfacing.
- 7.6. Understanding the detailed pin out of the Microcontroller.
- 7.7. Understanding different protocols and peripherals of Flight Controller Board
- 7.8. How can we use Microcontroller in our Own Circuits?

## **8. Introduction to Battery**

- 8.1. Difference between Lithium Ion (Li-ion) and Lithium Polymer (Lipo) Battery
- 8.2. Characteristics of Lipo Battery
- 8.3. Benefits and Downsides of using Lipo
- 8.4. Charging Lipo Battery
- 8.5. Maximum charge voltage and current
- 8.6. How to overcome over discharging
- 8.7. Do's and Don'ts for Lipo
- 8.8. Safety Precautions

## **9. Radio Devices**

- 9.1. Definition
- 9.2. Use of RC Remote Control
- 9.3. Understanding Radio Transmitter
- 9.4. Types of Radio Transmitter
- 9.5. Different Channels of Radio Transmitter
- 9.6. Basic Functionalities of RC Transmitter

## **10. Assembling the Robosapiens Quadcopter Mega DIY Kit**








## **11. Installation of Software and Debugging**

- 11.1. Flashing the Firmware into Flight Controller Board with the use of Programmer
- 11.2. Updating the Firmware
- 11.3. Synchronizing RC Transmitter and Receiver
- 11.4. Calibrating RC Transmitter
- 11.5. Working with Flying Model Simulator (FMS)

## **LIVE Projects Covered:**

- 1. Calibrating RC Transmitter
- 2. Flying Model Simulator
- 3. Assembling
- 4. Flying Session

## 7 Days KIT Contains:

| Sl. No. | Name of the Component  | Quantity | Figure  |
|---------|--|----------|---|
| 1       | <i>Glass Fiber Quadcopter Frame with integrated Power Distribution Circuit</i> | 2        |    |
| 2       | <i>Pair Legs (RED and White)</i>   | 2        |    |
| 3       | <i>Pair Propellers (Left and Right)</i>  | 2        |    |
| 4       | <i>Screw driver</i>  | 1        |    |
| 5       | Robosapien's Educational and Software Material CD                              | 1        |   |
| 6       | Nut Bolt Packet  | 1        |  |
| 7       | Paper Beg/Box  | 1        |  |