Quadcopter Course Content

Objective:

This workshop helps participants to develop a Quadcopter project from scratch while understanding the various engineering concepts in making a working Unmanned Aerial Vehicle. Developing a Quadcopter provides the right kind of hands-on application that student needs!

Session 1: Introduction

- Introduction to UAV & Quadcopter
- Introduction to UAV: Unmanned Autonomous Vehicles
- Different Types of Quadcopters
- Application of UAV & Quadcopter
- Basics of hardware and software
- New and Upcoming Technologies

Session 2: Electronics Explanation

- Introduction to electronics
- Applications of electronics
- Electronics components explanation
- Voltage divider rule
- Introduction to analog Circuits
- Different types of motors

Session 3: Explanation of Robotics

- Introduction to Autonomous Robots
- Interaction between real and digital world.
- Concepts of artificial intelligence.
- Microcontrollers and Microprocessor difference
- Introduction to embedded system
- Video sessions on advancements in Technology
- Concepts of hardware and software interface
- Different types of Sensors
- Accelerometer
- Gyro
- Barometer
- Different Microcontroller Boards
- Different types of controllers

Session 4: Frames Introduction

- Introduction to Quadcopter Frames
- Different types of Frames
- Center of Gravity
- Different materials used for frames
- Designing different frames
- Developing different models
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Session 5: Explanation of Motor

- Introduction to Brushless Motors
- Different types of Motors
- Motor Ratings
- Concept behind
- How to choose correct motor for your Quadrotor.
- Motors used in other applications

Session 6: Different types of Propeller

- Introduction to ESC
- Electronic Speed Controller Demystified
- Different types of ESC
- ESC Rating
- ESC used for Quadrotors
- ESC Connections with propellers

Session 7: ESC Demystified

- Introduction to ESC Electronic Speed Controller Demystified
- Different types of ESC
- ESC Rating
- ESC used for Quadrotors
- ESC Connections with propellers

Session 8: Controllers Explanation

- Introduction to KK 2.0 Quadcopter Controller Board
- KK 2.0 Controller Board Explanation
- Different Controller boards
- Connections of ESC to KK 2.0
- Calibration in KK 2.0
- Safe and Armed mode explained
- Self-Level Mode Explained
- Tx-Rx Calibration with KK 2.0

Session 9: Explanation of Transmitter and Receiver

- Introduction to 2.4Ghz TX RX Transmitter used for Quadrotors
- TX Rx Explained
- Tx Rx connections with Controller Board
- Checking null factor
- Proper calibration
- Introduction to Batteries
- Batteries used for Quadrotors
- Li Po Battery and Charging
- Connections of Li Po Battery
- Precautions with Li Po Battery

Session 10: Flight Mode Demystified

- Flight Mode Final Calibrations and Testing
- Weight Calibration
- Center of Gravity checking
- Checking connections
- Selecting proper modes for flight
- Safety Precautions
- Take Off

Session 11: QUERY