

# 1 WEEK NATIONAL LEVEL WINTER TRAINING ON Quad Copter Development



**Free Quad Copter Development Kit to each team**

**Fabrication, Assembling, Calibration, Testing & Flying of the Quadcopter**

**Get Certification from NWTP-2016 association with Cognizance IIT-Roorkee**

## Why Quadcopter Training from NWTP-2017 ?



- QuadCopter development Project will be covered in this Training.
- Our syllabus is professionally designed to cover Basic as well as Advance aspects of QuadCopter development.
- Each day of our training is well planned to provide you with Theoretical as well as Practical Knowledge of the module
- Each day will come up with New Practical & Projects which makes the training interesting and exciting.
- Time to time Practical Assignments will be provided to the students, which will help them in doing practice at home.
- Revision Time & Query Sessions are provided to the students which help them in clearing previous doubts.
- Exam will be conducted at the end of basic as well as Advance module to test the knowledge level of the students.
- Time for Project Workshop will be provided to the students, in which students will develop a project of their own choice. This will encourage Innovative Ideas among students.

## 1-week Training Certificates



1. Certificate of Participation from NWTP-2017 Cognizance IIT-Roorkee.
2. Certificate of merit from NWTP-2017, Cognizance IIT-Roorkee.
3. Certificate of Coordination from NWTP-2017, Cognizance IIT-Roorkee.
4. College will get Center of Excellence from NWTP-2017, Cognizance IIT-Roorkee.

## Benefits of association with NWTP-2017



- Name and Logo including website link will be published on our official website mentioning that “You are our Official Zonal Partner”.]
- Authorized Team will visit your College to organize the entire event.]
- The chance to get signs the MOU between Finland labs New delhi & Your estimated college.
- An email will be sent to more than 1 lack users of our web partners about your college publicity.]
- Posters and Flexes will be sent to you for effective regional publicity.]
- All India publicity through Web marketing will also be done.]

## Benefits to the participants



- Learn & Interact with renowned Industry Experts.
- Project Completion letter to each attendee from Finland Labs New delhi
- The Certificate of Participation in association with Cognizance IIT-R.
- Free QuadCopter development Kit.
- Students will get the opportunity to have Free 6 month project based Internship.
- Zonal center's winners will be called to participate in the final round will be held at IIT-Roorkee.
- Top Teams will be awarded as winners with the certificate of honor & respected prizes at IIT-Roorkee

## 1-week Quad Copter Project with Free Quad Copter Kit

- Introduction to Rotary-wing aircraft
- Introduction to design and development of Multi Rotor Vehicles
- Understanding the Electronics circuitry involved in Quad copter
- Learning about the working of accelerometer sensors, gyroscopes and controllers
- Hands-on experience for participants with DC motors, electronic speed controllers and Quadcopter Embedded control board
- Exposure to Design and concepts of Embedded Systems behind Multicopters
- Fabrication of Quadcopter frame and its circuit
- Calibration and Testing of the developed Quadcopter
- Quadcopter Flying using Radio Control and competition

### Free Quad Copter Training Kit Details

- Quad frame Power Distribution Board
- kk multi copter control board V 5.5
- Screws and screw Driver
- Radio Transmitter
- Radio Receiver
- Multirotor Stabilization Controller
- 30A Electronic Speed Controller 4 nos
- 1000KV Brushless DC Motor 4 nos
- Propellers (1 pair of Pushers + 1 pair of Pullers)
- 2200mAh Battery 01 nos
- Normal Battery Charger 01 nos
- Battery Strap 01
- DEAN / XT60 connector
- Bullet Connectors 12 nos



# 1-Week Quad Copter Development Course Content

## Day 1

### Introduction to Multicopter

- Definition
- History of Quadcopter
- Difference between different types of Multicopter
- Applications of Quadcopter
- Uses of Quadcopter
- Working Mechanism
- Operating Techniques
- Constructional Techniques

## Day 2

### Base of Multicopter

- Frame
- Types of Frame
- Frame Configuration
- Propeller
- History of Propeller
- Theory and Designing of Propeller
- Standard Propeller Size
- Different forces acting on Propeller
- Understanding Propeller Size and Control
- Analysis of Propeller Pitch, Diameter and RPM

## Day 3

### Motors

- Types of Motors
- Basic working concept of Motors
- Characteristics of BLDC
- Advantages of BLDC
- Applications of BLDC
- Theory of operation of BLDC
- Different Phase BLDC Motor
- Evaluation of BLDC

## Day 4

### Electronic Speed Controller (ESC)

- Features
- Working
- Pulse Width Modulation
- Interfacing of ESCs
- Start up Procedures
- Protection Methods
- Trouble Shooting

### Overview of Sensor

- Definition
- Different Types of Sensors
- Use of Sensor in QuadCopter
- Interfacing of Sensors

## Day 5

### Introduction to Flight Controller Board

- What is Microcontroller?
- Difference between Microcontroller and Microprocessor.
- Microcontroller Architecture and Interfacing.
- Understanding the detailed pin out of the Microcontroller.
- Understanding different protocols and peripherals of Flight Controller Board
- How can we use Microcontroller in our Own Circuits?

## Day 6

### Introduction to Battery

- Difference between Lithium Ion (Li-ion) and Lithium Polymer (Lipo) Battery Characteristics of LipoBattery
- Benefits and Downsides of using Lipo
- Charging Lipo Battery
- Maximum charge voltage and current
- How to overcome over discharging
- Do's and Don'ts for Lipo
- Safety Precautions



## Day 7

### Radio Devices

- Definition
- Use of RC Remote Control
- Understanding Radio Transmitter
- Types of Radio Transmitter
- Different Channels of Radio transmitter
- Basic Functionalities of RC Transmitter

### Installation of Software and Debugging

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

### Live Flying Session with Experts Guidance

### **What are the other requirement for this training program?**

- Seminar hall/classroom having the enough capacity to conduct hands-on-session for all participants.
- Good Quality public address system ideally two cordless mikes will be required.
- Projector/ Screen along with black/white board for teaching and presentation purposes.
- One small stereo jack cord to in laptop for its sound system.
- This training center can only be arranged for a minimum of 30 students
- 1-week Accommodation to our resource team

**Training Duration:**1-week (3-4 hours each day)

### **Training Fee:**

Rs.5500/-Participant + @15% service tax

(The fee includes training, certification, and Event registration and a free Quad Copter Kit to each Team (5 members))

Rs.3000/-Participant + @15% service tax

(The fee includes training, certification, and Event registration and a Taken away Quad Copter Kit to each Team (5 members))

Please be free to contact us for any kind of discussions related to NWTP-2017

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