

DRONEWORKSHOP

Topics to be covered:

1. Introduction to UAV and UAS
2. Difference between Drones, UAV, and UAS
3. History of Drones
4. Fundamentals of Flying, Flight Dynamics and Basics of Aerodynamics
5. Understanding the Aerodynamics of flying objects
6. Bernoulli's Principle and its application
7. Multirotor
8. Different types of drone (multirotor)
 - a. Classification based on Configuration
 - b. Classification based on control perspective
9. what is a Quadcopter
10. principal of Quadcopter
11. Configurations In Quadcopter
 - a. + Configuration
 - b. × Configuration
12. Components used in drone
13. Airframe
 - a. How to define a drone frame and size
 - b. Mechanical and Physical properties
 - c. Materials
14. Powerplant- Battery
 - a. Batteries used in drones for power
 - b. Basic characteristic of LiPo Battery
 - i. Cell configuration
 - ii. Battery Voltage
 - iii. Discharge
 - iv. Battery Capacity
 - c. How to Choose correct Battery for your drone
 - d. Safety Precautions
15. ESC
 - a. What is a ESC –Electronic Speed Control
 - b. Need of ESC
 - c. Features of ESC
 - d. Working of ESC
 - e. Components used in ESC
16. Propulsion system
 - a. What is propulsion

- b. Principle of Propulsion
 - c. Components used for multirotor propulsion
 - i. Motor
 - ii. Propellers
17. Motor
- a. Working of DC Motor
 - b. Brushless DC Motor
 - i. In Runner
 - ii. Out runner
 - c. Brushed DC Motor
 - d. Coreless DC Motor
 - e. Motor Characteristics
 - f. How to Choose motor for your drone
18. Propellers
- a. What is propeller and its function
 - b. Propeller labeling
 - c. Basics of Aerodynamics of propeller
 - i. Thrust
 - ii. Pitch
 - iii. Pitch angle
 - d. How to choose Propeller for your drone
19. Flight Controller
- a. What is FC
 - b. Need of FC
 - c. Types of FC
 - d. Components of FC
 - e. Working principle
 - f. Which one will work best for you
20. Transmitter and Receiver
- a. What is transmitter
 - b. What is receiver
 - c. Function of Transmitter and receiver
 - d. Types
 - e. Working of 2.4 ghz transmitter
21. Sensors
- a. Camera
 - b. Gyroscope
 - c. Accelerometer
 - d. Barometer
 - e. Distance sensor
 - f. GPS sensor
22. Flight Controller Programming
- a. Introduction to flight Controller programming
 - b. UI of flight controller IDE
 - c. Functions and their uses
 - d. Simple program
 - e. Final Program

23. A hands-on session on Drone Assembly

- a. How to assemble a drone
- b. Things you will need
- c. Mounting and fixtures
- d. Mistakes to avoid
- e. Test your assembly

24. Flying Session

- a. How to operated RC Drone
- b. Buttons and their functions
- c. How to connect Remote controller to drone
- d. Test
- e. Fly

25. How to Build your own Drone

- a. Defining a mission
- b. How to use the knowledge gained in this workshop to make correct choices for drone components
- c. Assemble
- d. Program
- e. Fly