Three-Day National Workshop

BASICS & REAL - WORLD APPLICATIONS OF UAVs & DRONES

December 6-8, 2023 [Wednesday- Friday]

BACKGROUND

Unmanned Aerial Vehicles [UAVs], more commonly known as drones, have emereged as a groundbreaking technological innovation with diverse applications across various industries. These versatile aircraft operate without a human pilot on board, offering unprecedented capabilities for remote sensing, data collection, observation, and exploration in areas that were previously inaccessible or time-consuming to survey. They can be remotely controlled by a human operator or can fly autonomously based on pre-programmed flight paths or real-time data. Drones are revolutionizing the way we interact with our environment, enabling us to access hard-to-reach areas, gather real-time information, and execute tasks more efficiently than ever before.

Drones also play a pivotal role in disaster management and relief efforts, aiding in rapid damage assessment and identifying potential hazards in hazardous zones without endangering human lives. For infrastructure inspection, drones equipped with high-resolution cameras and LiDAR technology can thoroughly assess the structural integrity of bridges, pipelines, and power lines

In this context, it is necessary to train youth in the operation and maintenance of UAVs and drones to meet the growing demand for trained personnel. The proposed national workshop will serve as a platform to empower individuals and professionals with the necessary expertise to responsibly operate and harness the potential of UAVs and drones. In view of this, it is planned to organize a three-day national workshop from 6-8 December 2023 (Wednesday - Friday) jointly by KSTA and Multiplex Drone Private Limited

ABOUT KSTA

Karnataka Science and Technology Academy (KSTA), an autonomous organization under the Department of Science and Technology, Govt. of Karnataka was established in the year 2005 under the Chairmanship of Padma Vibhushan Awardee Prof. U.R. Rao, Former Chairman, ISRO/Secretary, DOS, GOI.

KSTA was established with an objective of fostering STEAM (Science, Technology, Agriculture, Engineering and Mathematics) education at different levels in an educational pyramid as well as to popularize science among general public in the State. KSTA has been conferred the 'National Award for Outstanding Efforts in Science & Technology Communication in General (Category-A) for the year 2022', by the National Council for Science and Technology Communication (NCSTC), Department of Science and Technology, Government of India

ABOUT MULTIPLEX DRONE PVT LTD

Multiplex Drone Private Limited, established in 2019 in Bengaluru, is promoted by Multiplex Group of Companies, which holds a legacy in agriculture for over five decades. Since its inception, the company has been working towards excellence in drone technology to deliver the best-in-class quality manufactured indigenous drones, which are named Multiplex drones. So far, the company has developed 8 variants of drones with different capacities and applications. The company is also one of the Drone Pilot Training Institutes in the country recognized by the Directorate General of Civil Aviation (DGCA) for imparting training on Remote Pilot Certificates to eligible candidates as per their guidelines. All required infrastructure has been established at the Multiplex Centre campus at Nelamangala for drone training as per DGCA guidelines, which falls in the green zone. So far, more than 150 DGCA Certified Commercial Pilots have been trained by this institute. The R&D Center of the company is situated at Nagarbhavi, which has the capacity to manufacture 100 drones a month.

TOPICS COVERED

Day:1 -December 6, 2023 [Wednesday] - Time: 11.30 am - 05.00 pm

BASIC DRONE RULES 2021:

- International Rules, Regulations, Standard & Practices; Civil Aviation Requirements, AIPS, NOTAM; Classification & Categorization of Drones; Type Certification of Drones; Registration, Sale & De-Registration of Drones; Operations of Drones; Dos and Don'ts; Remote Pilot Certificate & Drone Insurance

BASIC PRINCIPLES OF FLIGHT

- Fundamentals of Flight Aerodynamics: Take-off, Flight and Landing, Maneuvers, turns and circuit patter

ATC PROCEDURES & RADIO TELEPHONY [NON-FRTOL]

- Understanding ATC Operations; Airspace Structure and Airspace Restrictions with knowledge of no drone zones; Flight regulations and procedures in Yellow zone; RT Phraseology & Communicating with ATC including; Position and Altitude Reporting; Fligh Planning Procedures including Altimeter setting procedures; Collision avoidance; Radio Telephony (RT) techniques

FIXED-WING OPERATIONS AND AERODYNAMICS

- Types of Fixed-wing Drones: make parts, terminology; Operation and Maneuvers of Fixed-wing Drones, Flight Performance; Intro to Mission Planning; Instrument Flying & Navigation [GCS]; Application of Fixed-wing UAVs Pros and Cons of Fixed Wing Drones

Day:2 - December 7, 2023 [Thursday] - Time: 10.15 am - 01.30 pm

ROTORCRAFT OPERATIONS AND AERODYNAMICS

- Basic Drone Terminology & Parts; Types of Drones, Material Used and Size of Drones; Drone Anatomy; Different Parts of Drones; Avionics & C2 Link; Intro to Mission Planning, Instrument Flying & Navigation [GCS]; Applications and operations of Multirotor, Flight Performance Pros and Cons of Rotorcraft Drones

HYBRID OPERATIONS AND AERODYNAMICS

- Principles of Aerodynamics, Types of Hybrid Drones & Parts; Intro to Mission Planning, Instrument Flying & Navigation [GCS] Applications of Hybrid UAVs and Comparison with Rotorcraft 7 Aeroplan

WEATHER AND METEOROLOGY

- The Standard Atmosphere; Measuring Air Pressure, Heat and Temperature, Wind Moisture, Cloud Formation, Icing and its Effects; Effect of Atmosphere on RPAS Operation & Hazardous Weather Avoidance; Met Terminal Aviation Routing Weather Report (METAR)

Day:3 - December 8, 2023 [Friday] - Time: 10.15 am - 03.30 pm

DRONE EQUIPMENT MAINTENANCE

- Maintenance of Drone; Flight Control Box; Ground Station; Maintenance of Ground Equipment; Batteries and Payloads Scheduled Servicing; Repair of Equipment, Fault Finding and Rectification

RISK ASSESSMENT & ANALYSIS

- Safety Management/ TEM; Drone Emergency & Handling; Loss of C2 -link; Fly- aways [Straying]; Loss of Power; Other Emergencies; Control Surface Failures; Human Performace & Pilot Incapacitation; Fail-Safe Features

PAYLOAD, INSTALLATION & UTILIZATION

- Types of Payloads - What to Carry, What not to Carry, Parts of Payload Installation; Features of Payloads Utlization

INTRO TO DRONE DATA & ANALYSIS

- Principles of Observation; Elements of Image & Video Interpretation; Introduction to Photogrammetry; Types of Image & Video Data Analysis

RESOURCE EXPERTS

Dr. H Honne Gowda,
Chief Executive Officer,
Multiplex Drone Pvt Ltd

Shri Aditya A
Product Manager
Multiplex Drone Pvt. Ltd

Dr. S N Omkar
Chief Reserach Scientist
Control & Guidance, IISc

Shri Anup Kumar Yemme
Assistant Manager- Product Development
Multiplex Drone Pvt Ltd

Shri R Venkatesh
Chief Scientist & Head,
PBMD CSIR-NAL

Shri Mughilan Thiru Ramasamy
Skylark Drones

CONVENOR

Dr. A M Ramesh
Chief Executive Officer,
Karnataka Science and Technology Academy

COORDINATOR

Shri Umesh Ghatage
Scientific Officer,
Karnataka Science and Technology Academy

PARTICIPANTS

Post Graduates, Under Graduates, Diploma Holders in Science & Engineering.

Any Other interested students can participate

REGISTRATION : FREE

REGISTRATION

https://forms.gle/fBWXpnoczCTd3ZDFA

Age Limit : 18 - 35 Years

Accommodation will be arranged at our guest house

Contact us

Prof. U R Rao Vijnan Bhavan, GKVK Campus, Major Sandeep Unnikrishnan Road, Opp. Doddabettahalli Layout Busstop, Vidyaranyapura Post,
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