



**MGR ASSOCIATION FOR GREAT INNOVATIVE CREATORS**

Department of Civil Engineering

|                              |  |                     |                     |
|------------------------------|--|---------------------|---------------------|
| Event Title                  | Technology talk on Drone Technology for Surveying and Monitoring   |                     |                     |
| Objective of Event           | Provide students with a foundational understanding of unmanned aerial vehicles (UAVs), their components, and control systems such as GPS-based autonomous and remote piloting. |                     |                     |
| Chief Guest /Speaker Details | Manikandan T, Associate Professor, Department of Aeronautical Hindustan University   |                     |                     |
| Date                         | 03/12/2025   | Time                | 10.00 AM to 12.00PM |
| Venue                        | CIVIL SMART ROOM   | No. of Participants | 60                  |

REPORT

TITLE

Technology talk

CONTENT

We are delighted to share the Technology talk event report on Drone Technology for Surveying and Mapping organized by the Department of Civil Engineering in the Smart Room of Civil Department on 11.12.2025 at 02.00PM for students of B.Tech, and M.Tech..Resource person for the event was Dr.T.Manikandan, Associate Professor, Hindustan Institute of Technology and Science(HITS),Chennai.The event co-ordinator Mr.D.Ramakrishna,Assistant Professor, Department of Civil Engineering, gave a welcome address and introduced the speaker to the audience. Dr. T.Manikandan explained the various facets of Drone technology including its applications for resource mapping, land use surveys and digital elevation model (DEM). Students participated with enthusiasm amidst full house. Dr.T.Kavitha,HoD, thanked the resource person for sparing his time as well as all the participants.We thank our Honorable President Er. A. C.S.Arunkumar sir for his support and encouragement in organizing this event. We also express our sincere thanks to all executives of our university.

Glimpse of presentation

- Unmanned aerial vehicle
- Drone regulations by DGCA
- Career Opportunities in Civil Engineering

Introduction

- GPS/autonomous/remote control (pilot)



# Dr. M.G.R.

## EDUCATIONAL AND RESEARCH INSTITUTE (Deemed to be University)

Maduravoyal, Chennai - 600 095. Tamilnadu, India.

(An ISO 9001-2015 Certified Institution)



### MGR ASSOCIATION FOR GREAT INNOVATIVE CREATORS

- Electronics, software

#### Applications

- Surveying & Mapping
- Construction & Monitoring
- Land use analysis
- Volume estimation
  - 100 acres of land within 1 hr
  - structural inspection of bridges
  - disaster management (floods, landslides etc.)

2022 LIDAR – Light detection and auto radiation

DEM –Digital Elevation Models

#### Types

- Multirotor drones
- Fixed wing drones
- VOT Vertical take-off landing

#### Size

Small/Micro/Nano-made of aluminium, plastic and carbon fibre

#### Features

- Thermal camera
- LIPAR sensor
- 3D models
- Li-Po batteries widely used
- Pitch, rolling and yawing movements
- Widely used for preparing Village Master Plan
- Works in Autocad, GIS and BIM platforms

#### Challenges

- Highly weather dependent
- Operation during daytime only (VLOS-visual line of sight)
- Battery limitations
- High initial cost
- Operational skill requirement
- Digital sky platform restrictions (400 ft i.e., 120 m altitude limit & no-fly

zones)

#### Future Trends

- AI
- Swarm modes (collection of drones operating under one main drone)
- o Surveying 1000 acres of land with 100 drones at a time

#### Requirements

- Valid UNOP(unmanned aircraft operator permit)
- UIN drone unique registration number
- Min age 18 years and qualification 10th std pass
- Training only through DGCA approved RPTOs
- No RPC needed for nanodrones weighing < 250g
- Validity of RPC for 10 years



# Dr. M.G.R. EDUCATIONAL AND RESEARCH INSTITUTE (Deemed to be University) Maduravoyal, Chennai - 600 095. Tamilnadu, India. (An ISO 9001-2015 Certified Institution)



## MGR ASSOCIATION FOR GREAT INNOVATIVE CREATORS



### EVENT OUTCOME

Identify major types of drones (multirotor, fixed-wing, VTOL) and match them to suitable engineering applications such as large-area surveys or detailed structural inspection.

### PHOTOS

