11 YEARS OF UNIVERSITY RECOGNITION

21 YEARS OF ACADEMIC EXCELLENCE

REVA UNIVERSITY
Bengaluru, India

School of Electronics & Communication Engineering

Organises

AICTE Training and Learning (ATAL) Academy

Sponsored

Six Day FDP On

Design Build and Real world usage of Drones

8th January 2024 to 13th January 2024

RUKMINI EDUCATIONAL
Charitable Trust

www.reva.edu.in

About the FDP

A Drone is commonly known as an unmanned aerial vehicle (UAV) means aircraft without any human pilot or crew on board. The UAV have risen to prominence in the recent years due to the increase in its applications. Drones are initially known for military use and now being used in various applications like agriculture, weather forecast, Geographic mapping, wildlife monitoring, Aerial videography, Disaster management, rescue operation, shipping etc.

The drone industry in India has seen a 300% growth in investments over the last three fiscal years. The total investment is nearly $50 million in fiscal year 2022-23.this growth is attributed to liberalized laws and regulations, increased accessibility to Indian aerospace and government initiatives. This creates a huge need for individual with skills and technical know-how in the field of drone research.

The objectives of the FDP

1. Develop an innovative and efficient drone design by integrating cutting-edge materials, propulsion systems, and aerodynamic principles, aiming to enhance flight performance and endurance.
2. Create advanced autonomous navigation and control algorithms, leveraging computer vision and machine learning techniques, to enable drones to safely navigate complex environments, avoid obstacles, and adapt to dynamic conditions.
3. Explore practical applications of drones in fields like agriculture, surveillance, and infrastructure inspection, assessing their real-world impact, challenges, and potential benefits for improving efficiency, safety, and data collection.

Outcome of the FDP

1. Innovative Designs: Attain novel drone designs that optimize aerodynamics and incorporate advanced materials, resulting in improved flight efficiency and extended operational capabilities.
2. Autonomous Proficiency: Achieve drones capable of autonomous navigation, leveraging AI-driven algorithms for obstacle avoidance, precise positioning, and adaptive responses in diverse environments.
3. Impactful Applications: Realize practical drone applications across industries like agriculture, disaster response, and infrastructure inspection, yielding enhanced data acquisition, reduced operational risks, and increased efficiency in various real-world scenarios.

Major Course Contents

- Overview of drone technology evolution and its significance in various industries.
- Basics of drone components, classifications, and key terminology.
- Discussion on the potential impact of drones in real-world applications.
- Understanding aerodynamics and its role in drone design.
- Exploration of lightweight materials and their selection for efficient drone construction.
- Introduction to autonomous navigation concepts for drones.
- Delving into navigation algorithms, computer vision, and machine learning techniques.
- Sensor fusion techniques and data processing for accurate perception.
- Exploration of drone applications in agriculture, surveillance, mapping, and more.
- Discussion on challenges including regulations, privacy concerns, and ethical considerations.
- Practical workshop on drone assembly, testing, and flight.
- Group projects involving drone design improvements or real-world use case simulations.
- Overview of emerging trends in drone technology, such as swarming, AI advancements, and sustainable energy solutions.

Practical sessions/Labs

- Lab1: Hands – on building a Quadcopter
- Lab2: Firmware installation and parameter configuration
- Lab3: Simulator practice and Overview of virtual drone Simulators
- Lab4: Industry Flying & static demonstration for various Aeromodels & drones

Resource Persons

Dr. S. N. Omkar

Chief Research Scientist, Aerospace lab, IISc, Bangalore

Dr. Prashanth Thankachan

Professor/Certified Drone pilot, St. John's research Institute, Bnagalore

Gouthami T S

Co-founder and CEO, AEROGO, Bangalore

Dr Cyril Prasanna Raj

Director, CCCIR

Dr. R Shashikumar

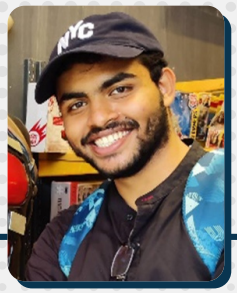
Professor, School of ECE, REVA University

Anil M Vanjare

Head Procurement and Planning-UAV, ARTPARK, Bangalore

Jitendra Kumar Purnamal Saini

CTO, AEROGO, Bangalore



Stains Samuel

Research assistant, Certified drone pilot, Aerospace lab, IISc

Dr Venkateshappa

Professor, school of electronics & communication Engineering, REVA University

About REVA University

REVA University is a State Private University established in Karnataka State under the Government of Karnataka Act No. 13 in the year 2012 in Bengaluru, the IT capital of India. The University is recognised by the University Grants Commission (UGC) and is approved by the AICTE (All India Council for Technical Education).

REVA University prides itself in contributing to every student's holistic development. The University currently offers 41 full-time Under Graduate Programmes, 32 full-time Post Graduate programmes, 18 PhD programmes, and certification and diploma programmes. The University offers programmes in Engineering, Architecture, Science and Technology, Commerce, Management Studies, Law, Arts & Humanities, and Performing Arts. Courses are offered in Certificate/Diploma and Post Graduate Diploma too. REVA University facilitates research leading to a Doctoral Degree in all disciplines. The programmes offered by REVA University are well-planned and designed based on methodical analysis and research with emphasis on knowledge assimilation, practical applications, hands-on training, global and industrial relevance, and their social significance.

About School of ECE

The school of Electronics and Communication Engineering offer B. Tech in Electronics and Communication Engineering ECE, B Tech in Electronics and Computer Engineering, B Tech in Robotics and Automation and M. Tech programs in various specialized streams. Course curriculum of school of ECE is designed to give greater emphasis on core Electronics and Communication Engineering with a flexibility to explore few of the areas like circuits, devices, signal processing, communication engineering and programming. B. Tech in Electronics and Computer Engineering B. Tech (ECM) program is designed to provide quality education imparting skills on Electronics, hardware, software and IT development. The school has well experienced faculty and staff to cater to the academic and overall development of students. The School of ECE labs are equipped with advanced hardware and software tools to pursue research in the field of signal processing, VLSI and Embedded Systems, MEMS, Wireless Communication and sensor Networks.

Vision of the REVA University

REVA University aspires to become an innovative university by developing excellent human resources with leadership qualities, ethical and moral values, research culture and innovative skills through higher education of global standards

Mission of the REVA University

- To create excellent infrastructure facilities and state-of the-art laboratories and incubation centres
- To provide student-centric learning environment through innovative pedagogy and education reforms
- To encourage research and entrepreneurship through collaborations and extension activities
- To promote industry-institute partnerships and share knowledge for innovation and development
- To organize society development programs for knowledge enhancement in thrust areas
- To enhance leadership qualities among the youth and enrich personality traits, promote patriotism and moral values.

Vision of the School of ECE

The School of Electronics and Communication Engineering is envisioned to be a leading centre of higher learning with academic excellence in the field of electronics and communication engineering blended by research and innovation in tune with changing technological and cultural challenges supported with leadership qualities, ethical and moral values.

Mission of the School of ECE

- Establish a unique learning environment to enable the students to face the challenges in the field of Electronics and Communication Engineering and explore multidisciplinary which serve the societal requirements.
- Create state-of-the-art laboratories, resources, and exposure to the current industrial trends to enable students to develop skills for solving complex technological problems of current times and provide a framework for promoting collaborative and multidisciplinary activities.
- Promote the establishment of Centres of Excellence in niche technology areas to nurture the spirit of innovation and creativity among faculty and students.
- Offer ethical and moral value-based education by promoting activities which inculcate the leadership qualities, patriotism and set high benchmarks to serve the society

Chief Patrons

Dr. P Shyama Raju, Chancellor, REVA University

Shri. Umesh S Raju, Pro-Chancellor, REVA University

Patrons

Dr. M. Dhanamjaya, Vice Chancellor, REVA University

Dr. Shubha A, Pro Vice Chancellor (Academics, Governance , Training & Placement) RBS

Dr. N. Ramesh, Registrar, REVA University

Dr. Rajashekhar C. Biradar, Pro-Vice Chancellor, REVA University

Dr. B P Divakar, Dean | Research and Innovation Council, REVA University

Convener

Dr. K. M Sudharshan, Professor & Director, School of ECE, REVA University

FDP Coordinators

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Organizing Committee

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Technical Support

Mr. Naveen Kumar Gowda and Mr. Srinivas. H T

Advisory Committee

Dr. Bharathi S. H.,	Professor and HoD R&A
Dr. Manjunath R Kounte,	Professor and HoD ECM
Dr. P. I. Basarkod,	Professor
Dr. R. Venkata Siva Reddy,	Professor
Dr Prahlad Rao,	Professor
Dr. Mrinal Sarvagya,	Professor
Dr. Mahesh Chandra,	Professor
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Dr. Nayana D K,	Professor
Dr. Gyanappa Walikar,	Professor
Dr. T.S.Jayadev,	Professor
Dr. Veena.K N,	Professor
Dr. Manjula.R B,	Professor
Dr. Prameela Kumari. N,	Professor
Dr. Prashant V. Joshi,	Professor
Dr. Riyaz A Rahiman,	Associate Professor
Dr. Sankata Bhanjan Prusty,	Associate Professor
Dr. Devanathan M,	Associate Professor
Dr. Deepthi Murthy T S,	Associate Professor
Dr. Raganna A,	Associate Professor
Dr. VidyaSagar K N,	Associate Professor
Dr. Sankata Bhanjan Prusty,	Associate Professor
Dr. Shashank Dwivedi.,	Associate Professor
Dr.Chaya,	Associate Professor
Dr.Raveendra G,	Associate Professor

Who can participate ?

PG Students/Research Scholars/Faculty Members
The number of participants will be limited to 50 only.

Registration Fees: Nil
Registration Link: https://www.aicte-india.org/atal
Certification

A test shall be conducted by coordinator at the end of the program. The certificate shall be issued to those participants who have attended the program with 100% attendance and scored minimum 60% marks in the test.

08.01.2024	09.01.2024	10.01.2024	11.01.2024	12.01.2024	13.01.2024
9:00 – 9:30 **Inauguration** Chief Guest Dr. S.N. Omkar **Chief Research Scientist Aerospace lab, IISc, Bangalore**					
9:30 – 12:00 Session 1 Dr. S.N. Omkar **Chief Research Scientist, Aerospace lab, IISc, Bangalore** Topic: **Conceptual design for an industrial drone/Quadcopter and its application**	**9:30 – 12:00** Session 3 Dr. Prashanth Thankachan, **Professor/Certified Drone pilot, St. John's research Institute, Bangalore** Topic: **Latest trends of UAV and its applications**	**9:30 – 12:00** Session 5 Dr. Venkateshappa, **Professor, school of electronics and communication Engineering, REVA University** Topic: **Sensors related to drones**	**9:30 – 12:00** Session 7 Gouthami T S **Co-founder and CEO AEROGO** Topic: **Aeromodelling : A pathway to engineering Excellence"**	**9:30 – 12:00** Session 9 Anil M Vanjare, **Head Procurement and Planning-UAV** **Topic:** **Drone applications in agriculture sector**	**9:30 – 12:00** Session 10 Dr. Cyril Prasanna Raj, **Director, CCCIR** Topic: **RISC V for Drones**
12:00 – 1:00 **Article Discussion**	**12:00 – 1:00** **Article Discussion**	**12:00 – 1:00** **Article Discussion**	**12:00 – 1:00** **Article Discussion**	**12:00 – 1:00** LAB Session: **Drone Flying basic Tutorial and drone mission demonstration**	**12:00 – 1:00** **Reflection Journal**
1:00 – 2:00 **Lunch**	**1:00 – 2:00** **Lunch**	**1:00 – 2:00** **Lunch**	**1:00 – 2:00** **Lunch**	**1:00 – 2:00** **Lunch**	**1:00 – 2:00** **Lunch**
2:00 – 4:30 Session 2 Anil M Vanjare, **Head Procurement and Planning-UAV** **ARTPARK, Bangalore**	**2:00 – 4:30** Session 4 Dr. Shashikumar R **Professor, School of ECE, REVA University** Topic: **Role of Electronics in Drone industry**	**2:00 – 4:30** Session 6 Stains Samuel, **Research assistant, Certified drone pilot, Aerospace lab, IISc** Topic: **Multirotor building and**	**2:00 – 4:30** Session 8 Gouthami T S **Co-founder and CEO AEROGO** Topic: **Aeromodelling and its applications in**	**2:00 – 5:30** Industrial Visit ARTPARK	**2:00 – 4:00** **MCQ, Feedback & Interactions**

Topic: **Basic principles of UAV hardware and Software**		**components preview**	**commercial drone"**		
4:30 – 5:30 LAB Session: **Hands – on building a Quadcopter**	**4:30 – 5:30** LAB Session: **Firmware installation and parameter configuration**	**4:30 – 5:30** LAB Session: **Simulator practice and Overview of virtual drone Simulators**	**4:30 – 5:30** LAB Session: **Industry Flying and static demonstration for various Aeromodels and drones** Speaker: Mr. Jitendra Kumar Purnmal Saini Co-founder and CTO **AEROGO**		**4:00 – 4:30** Valedictory Session Chief Guests 1.Dr Cyril Prasanna Raj, Director, CCCIR 2.Anil M Vanjare, Head Procurement and Planning-UAV

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