2021-22 Even semester

Volume 2 Issue 16

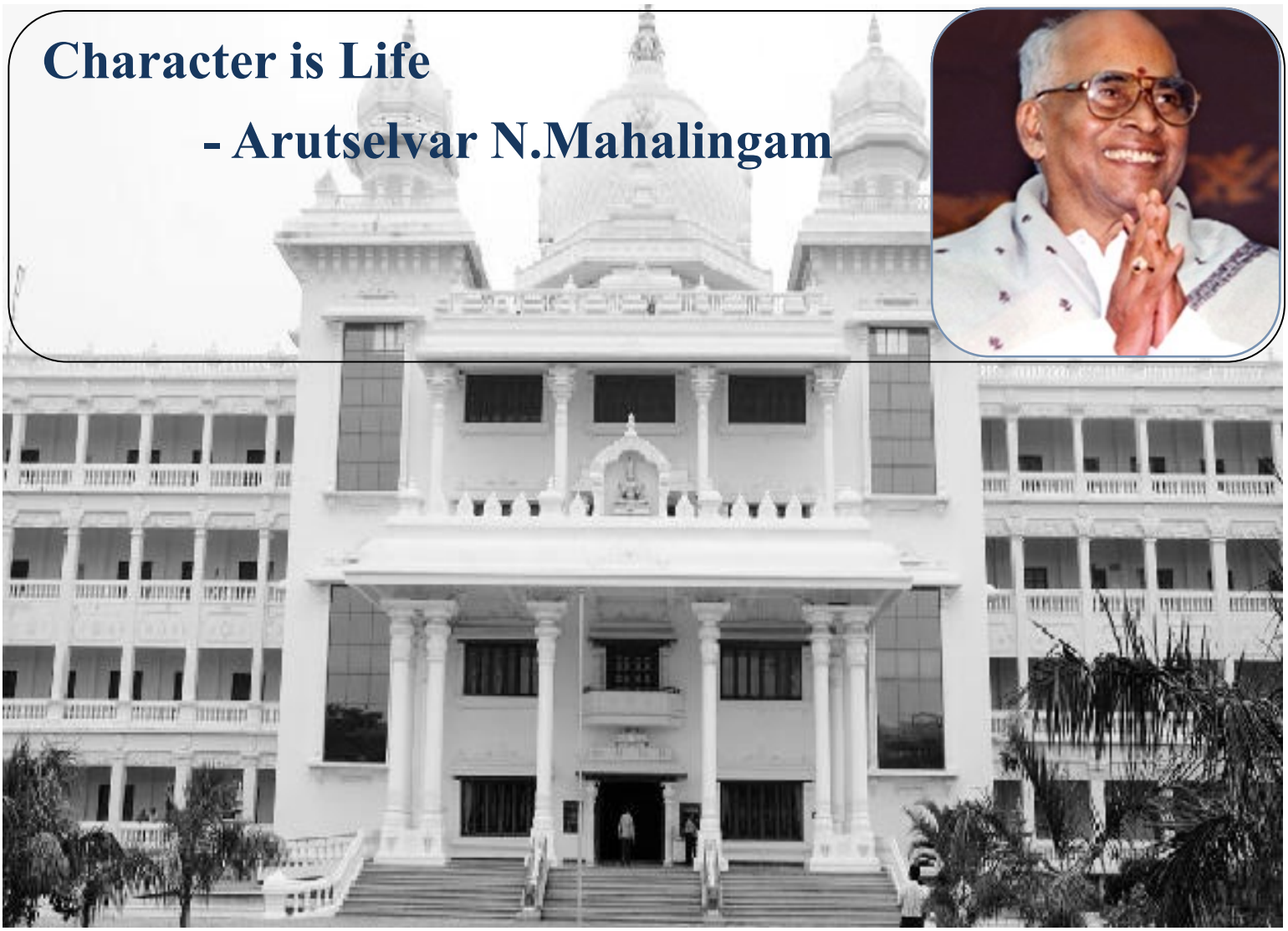
The Arrow

Department of Aeronautical Engineering Newsletter

KUMARAGURU
college of technology
character is life

Character is Life

- Arutselvar N.Mahalingam



HoD's Message:

I am thrilled to share the accomplishments of our department in this edition of the newsletter. Congratulations to our students who have excelled by qualifying in the GATE examination, marking a significant milestone in their academic journey. I also take pride in highlighting our department's strong collaborations with industry, enabling impactful internships and technology-driven initiatives. Furthermore, the successful organization of several workshops and technical sessions has enriched the learning experiences of our students and faculty alike.

These achievements underscore our commitment to excellence and teamwork. Let us continue to build on this momentum and strive towards even greater accomplishments.

In this issue

3

4

5

6

7

8

9

10

AIAA Aviation Forum Success

Dr. Prem Kumar P.S. successfully presented his research paper at the prestigious **AIAA Aviation Forum** in the USA. His work, titled **"Oil-Cooler Location Optimization Study of a Pusher Type Turboprop Aircraft Using CFD Simulation,"** highlights advancements in aerothermal optimization for turboprop aircraft. This accomplishment not only brings global recognition to our institution but also inspires students and faculty to pursue excellence in aerospace engineering innovation.

Congratulations to Dr. Prem Kumar P.S. on this remarkable achievement!

Celebrating Academic Excellence: PhD Achievement of Dr. Senthil Kumar M

We extend our warmest congratulations to Dr. Senthil Kumar M for successfully defending his PhD thesis on June 6, 2022, under the guidance of Dr. A.S. Krishnan, Associate Professor in the Department of Mechanical Engineering at Coimbatore Institute of Technology. This significant academic achievement reflects years of dedicated research, intellectual rigor, and perseverance in the field of mechanical engineering. His doctoral research contributes meaningful advancements to the discipline, demonstrating both technical expertise and scholarly commitment.

The department takes great pride in celebrating this important milestone in his academic career. We are confident that the knowledge and skills gained through this intensive research journey will serve as a strong foundation for his future endeavours.

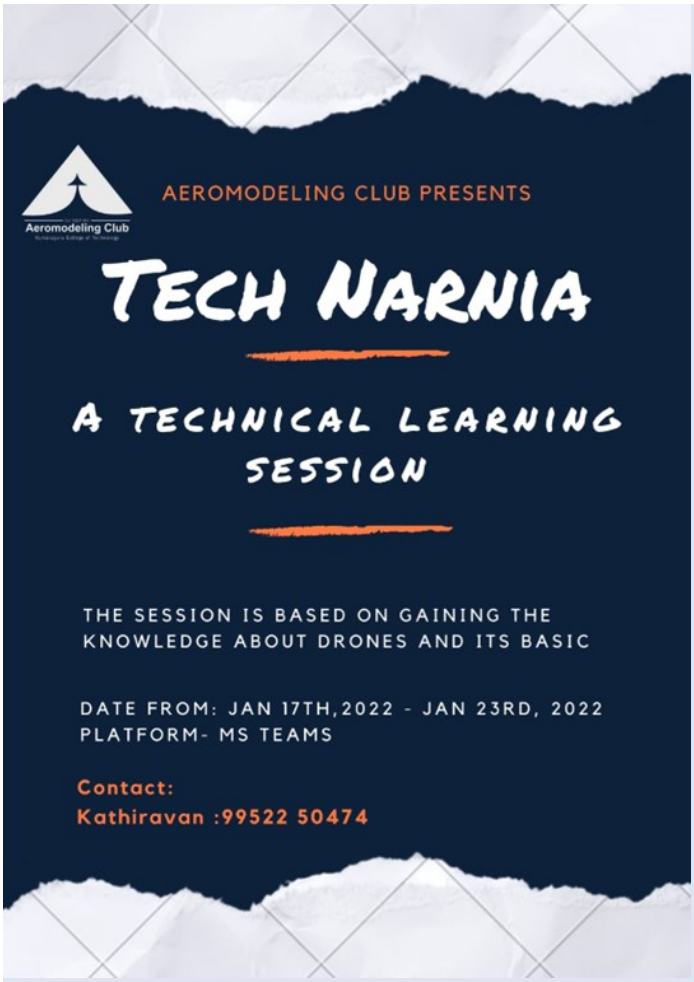
Tech Blogops: A Platform to Showcase Writing Talent

The Aeronautical Department Association successfully hosted an online event, **Tech Blogops**, aimed at nurturing and showcasing the blog-writing skills of students. The event saw enthusiastic participation, with **seven individual participants** and **one team** registering. Blogs were submitted via MS Forms and meticulously evaluated by a panel comprising **Mr. Sreenivasan** and **Mr. Sumanth Eshwar** from the final year Aeronautical Department, along with **Ms. Ansu Susan Deepak** from the 2nd-year ECE Department. After careful evaluation, **Ms. Janani Priyadarshini** was declared the winner of the event.

One Credit Course on Composite Materials

Third-year students participated in a **four-day one-credit course** on **Fabrication and Testing of Composite Materials**, conducted by **Mano Aircraft Pvt. Ltd.** from **May 11, 2022**.

A total of **49 students** took part in the program, where they gained practical knowledge about **fabrication techniques in composite materials**, **tools for handling composites**, and the **proper usage of resins and fibers**. The course provided hands-on experience, equipping students with essential skills for the field of composite material engineering.

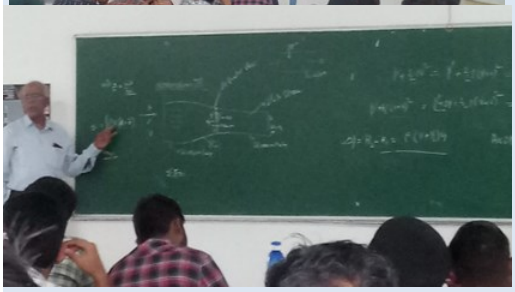


Tech Narnia: Unlocking the Basics of Coding, Design, and UAVs

The Aeronautical Department organized **Tech Narnia**, an enriching online event held from **January 17th to 24th, 2022**, with a total of **40 participants**. The event aimed to provide students with foundational knowledge in diverse fields, including **coding**, **computer-aided design (CAD)**, and **Unmanned Aerial Vehicles (UAVs)**.

- **Coding Basics**: Delivered by **Dharunika** and **Akshara** from the CS Department.
- **CAD Essentials**: Led by **Abhinash** and **Sabari** from the Aeronautical Department.
- **UAV Fundamentals**: Conducted by **Kiran** and **Manoj**, also from the Aeronautical Department.

The event was a resounding success, equipping attendees with practical skills and inspiring them to delve deeper into the exciting world of technology.



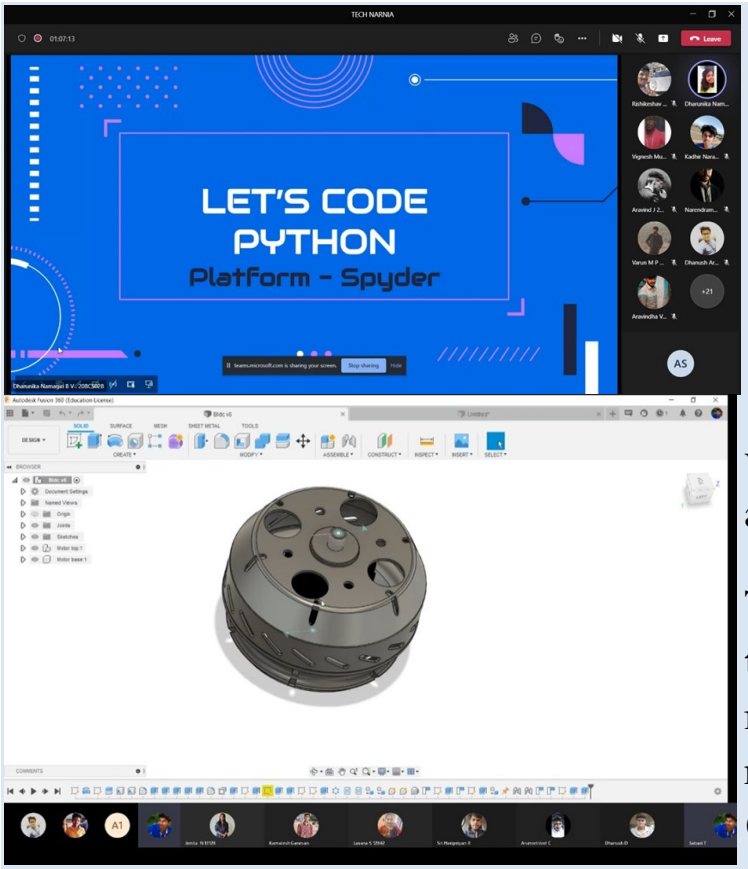
Guest Lecture on Propeller Theory by Dr. Haran

On the topic of propeller theory, **Dr. Haran**, an esteemed **Ex-DRDO Scientist**, conducted a guest lecture for the second-year students, focusing on low-speed aerodynamics. The lecture was highly informative and well-received by the students, offering valuable practical insights into the subject.

During the session, the students gained knowledge on:

1. The fundamentals of **propeller theory**
2. Key concepts in **propeller design**

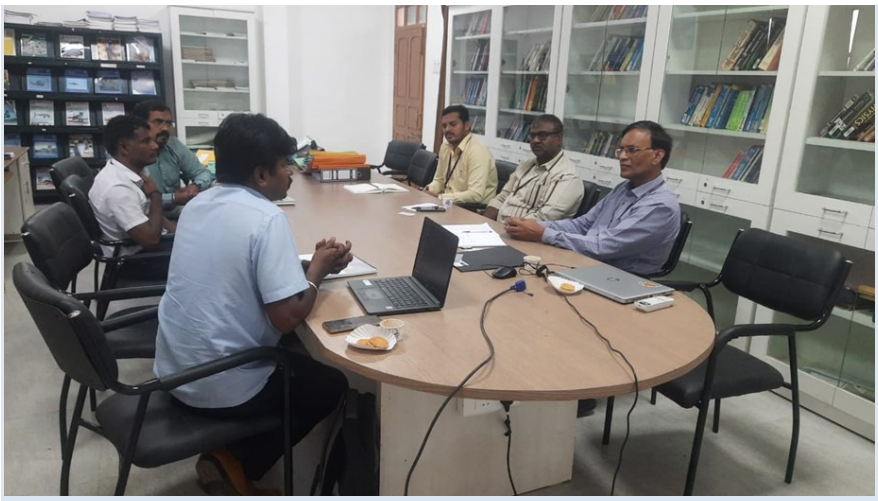
A total of **44 students** participated in this session, which enriched their understanding of aerodynamics in practical applications.



Enhancing Technical Skills through Online Learning

As part of the Aeronautical Department Association's initiatives, online learning sessions on **Python programming** and **CAD modeling** were conducted on **January 17, 2022**. These sessions aimed to equip students with essential technical skills relevant to the aeronautical domain.

The Python learning session introduced participants to the fundamentals of programming, emphasizing its applications in engineering and data analysis. Simultaneously, the CAD modeling session focused on design principles and 3D modeling techniques, essential for aeronautical engineering. These interactive sessions provided students with a strong foundation, inspiring them to further develop their expertise in these crucial areas.



Industry Collaboration

Mr. Balu P. M., Business Development Manager at **Janatics India Pvt. Ltd**, visited the campus to explore potential collaboration opportunities with the Aeronautical Department.

The discussion centered around **student training programs** and possibilities for **joint technology development** between the department and the company. This engagement marks a step forward in aligning academic expertise with industry requirements, learning experiences for students.

Programming challenge

Engaging Students through Innovative Activities

As part of the **SEDS Club, KCT Dr. Prem Kumar P S** organized two impactful events:

1. **DSO Hunt**: An engaging exploration activity conducted on **February 23, 2022**, aimed at enhancing observational and analytical skills.

2. **Space Ware**: A stimulating hackathon event held on **February 25, 2022**, encouraging participants to develop innovative solutions in the domain of space technology.

Both events witnessed active student participation, providing a platform for creativity, critical thinking, and collaborative learning. These initiatives reflect the department's commitment to fostering student interest in space exploration.

Technical Seminar Participation

Mr. Sundararaj R. and **Mr. Naveen Kumar K.** attended a technical seminar on **"Dicronite Dry Lubrication Coating for Aerospace, Space, & Defense and Other Critical Applications"** at **Hotel Leela Palace**, Bengaluru. This seminar provided valuable insights into advanced lubrication technologies for critical industries.

GATE exam Qualified


GATE 2022 Scorecard
Graduate Aptitude Test in Engineering (GATE)

Name of Candidate	KAVIN R
Parent's/Guardian's Name	RAJU P
Registration Number	AE22S87407196
Date of Birth	06-Apr-2001
Examination Paper	Aerospace Engineering (AE)

GATE Score:	392	Marks out of 100:		33	
All India Rank in this paper:	548	Qualifying Marks*	General	EWS/OBC (NCL)	SC/ST/PwD
Number of Candidates Appeared in this paper:	4726		29.8	26.8	19.8

Valid up to 31st March 2025

Prof. Ranjan Bhattacharyya
Organising Chairman, GATE 2022
on behalf of NCB-GATE, for MoE

* A candidate is considered qualified if the marks secured are greater than or equal to the qualifying marks mentioned for the category for which valid category certificate, if applicable, is produced along with this score card.

Organising Institute: Indian Institute of Technology Kharagpur

Name: SAI SHANKARAN B
Registration Number: AE22S87407090
Gender: Male
Parent's/Guardian's name: SAVITHRI N
Date of birth: 15-March-2001
Examination Paper: Aerospace Engineering (AE)
Marks out of 100*: 49.33
All India Rank in this paper: 113


GATE 2022 Scorecard
Graduate Aptitude Test in Engineering (GATE)

Name of Candidate	PRASITHA H
Parent's/Guardian's Name	HARIKRISHNASAMY N
Registration Number	AE22S87407376
Date of Birth	21-Aug-2001
Examination Paper	Aerospace Engineering (AE)

GATE Score:	314	Marks out of 100:		27	
All India Rank in this paper:	866	Qualifying Marks*	General	EWS/OBC (NCL)	SC/ST/PwD
Number of Candidates Appeared in this paper:	4726		29.8	26.8	19.8

Valid up to 31st March 2025

Prof. Ranjan Bhattacharyya
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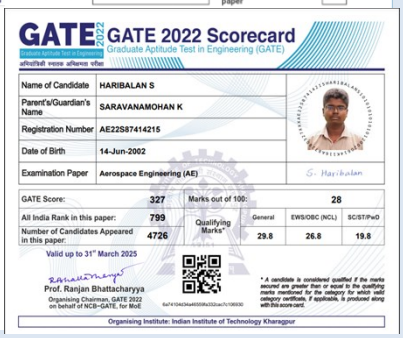
Organising Institute: Indian Institute of Technology Kharagpur


GATE 2022 Scorecard
Graduate Aptitude Test in Engineering (GATE)

Name of Candidate	HARIBALAN S
Parent's/Guardian's Name	SARAVANAMOHAN K
Registration Number	AE22S87414215
Date of Birth	14-Jun-2002
Examination Paper	Aerospace Engineering (AE)

GATE Score:	327	Marks out of 100:		28	
All India Rank in this paper:	799	Qualifying Marks*	General	EWS/OBC (NCL)	SC/ST/PwD
Number of Candidates Appeared in this paper:	4726		29.8	26.8	19.8

Valid up to 31st March 2025

Prof. Ranjan Bhattacharyya
Organising Chairman, GATE 2022
on behalf of NCB-GATE, for MoE

* A candidate is considered qualified if the marks secured are greater than or equal to the qualifying marks mentioned for the category for which valid category certificate, if applicable, is produced along with this score card.

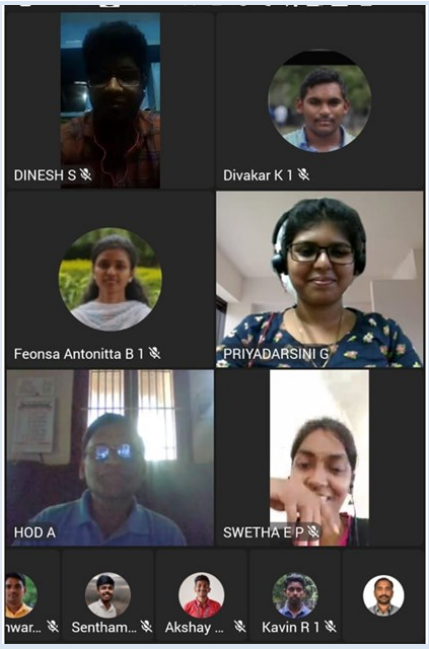
Organising Institute: Indian Institute of Technology Kharagpur

The Aeronautical Department proudly congratulates the following students for their remarkable achievement in clearing the **GATE Examination 2024**:

Their dedication and hard work have brought laurels to the department, showcasing their technical prowess and determination. We wish them continued success in their future endeavors. This achievement serves as an inspiration to all aspiring engineers aiming to excel in competitive examinations.

- **Sai Sankaran** (18BAE004) - All India Rank: **113**
- **Kavin** (18BAE026) - All India Rank: **548**
- **Haribalan S** (19BAE042) - All India Rank: **799**
- **Prasitha** (19BAE016) - All India Rank: **866**

Alumni Interaction for TANCET Preparation



On **April 23, 2022**, **Ms. Priyadharshini**, an alumnus of the **2016 batch** and a TANCET-qualified professional currently working at **VESTAS**, engaged with students to share her insights and strategies for preparing for the **TANCET exam**.

During the session, attended by **38 students**, she provided guidance on effective preparation techniques for TANCET and discussed the various courses available to students after clearing the exam. She also shed light on the job prospects and career opportunities that final-year students can explore post-TANCET qualification.

Exploring Digital Mission Engineering

On **March 23, 2022**, **Mr. Dhanish Abdul Khader** from **SS Technologies** delivered an insightful session for the **second- and third-year students** on the topic **Digital Mission Engineering Solutions using Systems Tool Kit (STK)**.

The session highlighted the fundamentals of **Systems Engineering** and introduced students to the capabilities of the **Systems Tool Kit**, a software suite widely used in **avionics and aerospace industries**. Mr. Dhanish emphasized the **career opportunities** associated with mastering this tool, especially in avionics-related companies. Students gained foundational knowledge of Systems Engineering principles and practical exposure to STK, enhancing their employability in the aerospace sector.

Strengthening Industry Collaboration

The department welcomed personnel from **IINVYSIS Pvt Ltd**, an avionics-specialized company based in Bangalore, for a recruitment drive. This visit marked a significant milestone, offering an excellent platform for students to secure placement opportunities in the avionics domain.

The collaboration underscores the department's commitment to bridging the gap between academia and industry, providing students with pathways to pursue careers in cutting-edge aerospace technologies.

Fostering Industry Collaboration

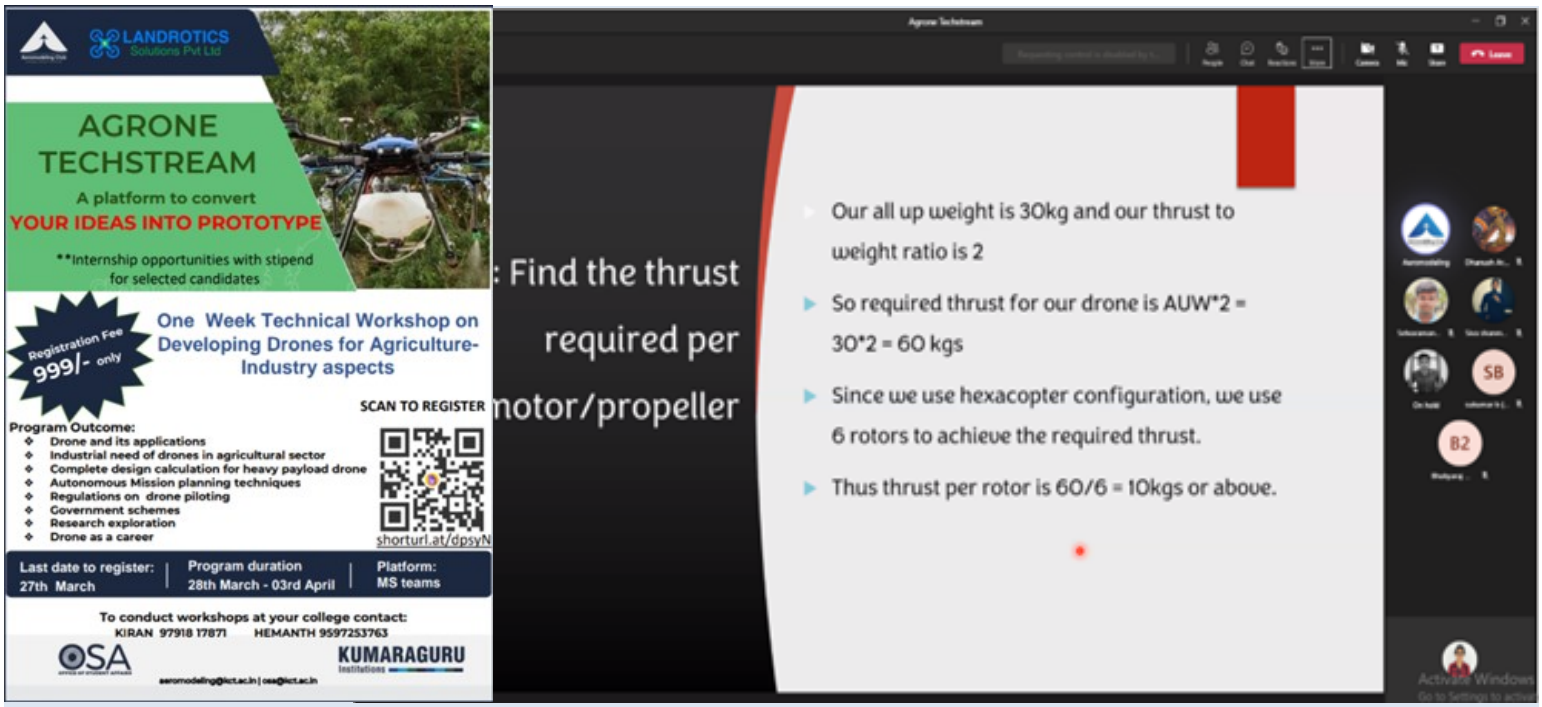
On February 2, 2022, faculty members from the Aeronautical Department—Dr. Sundararaj, Mr. Raj Kumar, and Mr. Naveen Kumar—engaged in a productive interaction with representatives from Lakshmi Carbons, located at Pudhukkuttai Thottam, Coimbatore.

The discussion centered around fostering industry-academia collaboration, focusing on facilitating internships for students and sharing research facilities. This initiative aims to strengthen ties with the industry.

Strengthening Industry Collaboration

Faculty members of the Aeronautical Department—Dr. Sundararaj K, Mr. S. Senthil Kumar, Mr. Rajkumar G, and Mr. Muthukumar S visited Mano Aircraft Private Limited at Kalapatti to explore potential collaboration opportunities. Mano Aircraft, recognized by the ATAL Innovation Council, is currently engaged in designing an all-composite light aircraft, showcasing their innovation and expertise in the field.

The primary outcome of the visit was to secure internship opportunities for final-year students, paving the way for practical industry exposure.



Agrone Techstream: Agricultural Drone Workshop

The Aeromodelling Club, in collaboration with Landrotics Private Limited, organized an Agricultural Drone Building Workshop for students both from KCT and external institutions. The event witnessed enthusiastic participation from 19 students, keen to explore the innovative intersection of technology and agriculture.

During the workshop, students were guided through:

1. Basics of Multirotors: Understanding how drones achieve flight.
2. Drone Components: A detailed exploration of each component's function and importance.
3. Hands-On Development: Building a 10-litre agricultural drone from scratch, fostering practical skills in drone technology.

This workshop provided participants with foundational knowledge and hands-on experience in agricultural drone technology, equipping them with skills for future advancements in the field.

List of Faculty activities during the 2021-22 Even Semester

1. Mr. Vijayanandh R, Assistant Professor presented his paper at the AIAA SciTech Forum and Exposition - 2022, organized by AIAA, USA on the title Conceptual Design and Comparative Power Generations on Unmanned Aerial Vehicle's Wing with Rotors using CFD.
2. Mr. Rajkumar G, Assistant Professor presented his paper at the MATERIAL TECH 2022, organized by National Institute of Technology, Raipur on the title Multi-Disciplinary Optimizations on the Various Composite Materials under Crash Load through Explicit Analysis.
3. Mr. Vijayanandh R, Assistant Professor presented his paper at the AIAA SciTech Forum and Exposition - 2022, organized by AIAA, USA on the title Parametric Study of Interaction Behavior of Laminar Jets.
4. Mr. Vijayanandh R, Assistant Professor presented his paper at the AIAA SciTech Forum and Exposition - 2022, organized by AIAA, USA on the title Material Optimizations on UAV's axial flow compressor blade by using FSI Approach.
5. Mr. Vijayanandh R, Assistant Professor presented his paper at the MATERIAL TECH 2022, organized by National Institute of Technology, Raipur on the title Comparative Structural and Frictional Analyses on Various Lightweight Materials for Aircraft Disc Brake.
6. Mr. Vijayanandh R, Assistant Professor presented his paper at the MATERIAL TECH 2022, organized by National Institute of Technology, Raipur on the title Optimizations on Various Light Weight Composite Materials under Complex Load using Advanced Computational Simulation.
7. Mr. Vijayanandh R, Assistant Professor published in an International Journal in collaboration with Dong Won Jun, Jeju national University, Jeju Nationl University, South Korea titled Theoretical Modelling of Thin Air Film Thickness in Miscible Liquids in Advances in Mechanical and Materials Technology. Lecture Notes in Mechanical Engineering. Springer, Singapore.
8. Mr. Arul Prakash R, Assistant Professor published in an International Journal in collaboration with Al-Bonsrulah H.A.Z, Department of Mechanical Engineering, Faculty of Engineering, Kufa University, Iraq titled Multi–Disciplinary Optimizations of Small-Scale Gravitational Vortex Hydropower (SGVHP) System through Computational Hydrodynamic and Hydro–Structural Analyses, Energy in the 21st Century Prospects and Sustainability, Sustainability 2022, 14(2), 727.

List of Faculty activities during the 2021-22 Even Semester

9. Mr. Vijayanandh R, Assistant Professor published a paper "Raja, Vijayanandh, Senthil K. Solaiappan, Lokeshkumar Kumar, Arishwaran Marimuthu, Raj K. Gnanasekaran, and Yosoon Choi. Design and Computational Analyses of Nature Inspired Unmanned Amphibious Vehicle for Deep Sea Mining" Minerals 12, no. 3: 342.

10. Mr. Naveen Kumar k published a paper titled Investigation of Energy Generation on Large RotaryWing Unmanned Aerial Vehicle's Propeller Using Coupled Engineering Approaches in Advances in Environment Engineering and Management/ pp. 209–224

11. Mr. Naveen Kumar k published a paper titled Lightweight Material Optimization of Aquatic Vehicles' Propeller Based on Fatigue Life Using Hydro Structural Interaction Simulation in ASME Conference Proceedings.

12. Mr. Raj Kumar G, Assistant Professor I published a paper " Multi-disciplinary Optimizations on Flexural Behavioural Effects on Various Advanced Aerospace Materials: A validated investigation" in Materiale Plastice journal https://doi.org/10.37358/Mat.Plast.1964

Participation of Faculty - Workshops / Seminars / Guest lectures /Training

1. Mr. Raj Kumar G, attended an International FDP on " Innovation in Materials for Advancements in Mechanical Industries" online from 17/1/2022 to 22/1/2022.

2. Mr. Raj Kumar G, attended an International FDP on " Innovation in Materials for Advancements in Mechanical Industries" online from 24/1/2022 to 28/1/2022.

3. Dr Premkumar PS, Asscoaite Professor attended National Seminar AAV2022 from 6.01.2022 to 7.01.2022 at ADE,DRDO, Bangalore

4. Dr Premkumar PS, Asscoaite Professor attended International Seminar on Higher Education Dialogue on "Revisiting Higher Education in India: Global, Local and Digital Imperatives" from 24.01.2022 to 27.01.2022 at Indian School of Business

5. Dr Premkumar PS participated in 5 days program conducted by AICTE Incorporating Universal Human Values in Education (An AICTE Initiative) from 31.03.2022 to 04.03.2022

6. Mr. S. Senthil Kumar participated in a 5 days program Inculcating Universal Human Values in Technical Education organized by AICTE from 28.02.2022 to 4.3.2022.

List of Faculty activities during the 2021-22 Even Semester

Papers Reviewed

1. M Senthil Kumar reviewed the paper on A Survey on Flight Maneuver Recongniton: evaluation and challenges in the Computer Modeling in Engineering and Sciences Journal.
2. Dr Premkumar PS reviewed the paper on Developing an approximation and validation in dashboard nozzles for reviewing demisting and de-icing issues in windshields in SAE Technical paper.
3. Mr. Vijayanandh R reviewed the paper on Simulation of the Interaction between Ship and Ducted Propeller with a Modified Body Force Method in the Ocean Engineering Journal
4. Mr. Vijayanandh R reviewed the paper on Multi-objective optimization design method of Marine propeller based on fluid-structure interaction in the Ocean Engineering Journal
5. M Senthil Kumar reviewed the paper on Identification of Critical Parameters Influencing Resistance Performance of Amphibious Vehicles based on an SM-SA Method in the Ocean Engineering Journal

Book Chapter Publication

1. Mr. Vijayanandh R published a book chapter successfully in Academic Press, Elsevier with the title Conceptual design and computational investigations of fixed wing unmanned aerial vehicle for medium-range applications with an ISBN number of 978-0 -323-90592-3

KUMARAGURU
college of technology
COIMBATORE – 641 049

Department of Aeronautical Engineering

INSTITUTE VISION

The vision of the college is to become a technical university of International Standards through continuous improvement.

INSTITUTE MISSION

Kumaraguru College of Technology (KCT) is committed to providing quality Education and Training in Engineering and Technology to prepare students for life and work equipping them to contribute to the technological, economic and social development of India. The College pursues excellence in providing training to develop a sense of professional responsibility, social and cultural awareness and set students on the path to leadership.

DEPARTMENT VISION

To attain excellence and global reputation in Aeronautical Engineering Education and Research.

DEPARTMENT MISSION

M1: The department is committed to provide quality education in Aeronautical Engineering to students to build their career and do quality research and thus contribute to the field of Aviation and Aerospace.

M2: The department aims to prepare students for their higher studies and research to contribute to the advanced technological needs of Aeronautical engineering.

M3: To encourage faculty to update their knowledge and teaching-learning process through continuous learning.

M4: To undertake inter-disciplinary research to contribute and support the industry.

PROGRAM EDUCATIONAL OBJECTIVES (PEOS)

The Program Educational Objectives (PEOs) of Aeronautical Engineering Undergraduate Program are to prepare the students:

I. To pursue a successful profession in leading organizations.

II. To pursue postgraduate degrees and conduct research at leading technological universities to contribute to the advancement in the field of Aviation and Aerospace industries.

III. Continue their professional development by utilizing educational and career building opportunities through their employer, educational institutions, or professional bodies.

PROGRAM OUTCOMES (POS)

PO1: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2: Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3: Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6: The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

and systems.

PO7: Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8: Ethics: Apply ethical principles and commitment to professional ethics and responsibilities and norms of the engineering practice.

PO9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams and in multidisciplinary settings.

PO10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11: Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Life-long learning: Recognize the need for and have the preparation and ability to engage in independent and life -long learning in the broadest context of technological change.

PROGRAM SPECIFIC OUTCOMES (PSOS):

PSO1: Apply fundamental principles of Aerodynamics, Structures, Propulsion, Materials, and Avionics to provide solutions to aerospace and non-aerospace industrial problems.

PSO2: Use the software packages in the design, manufacturing, testing and maintenance of aeronautical and aerospace based components