DEPARTMENT OF AERONAUTICAL ENGINEERING

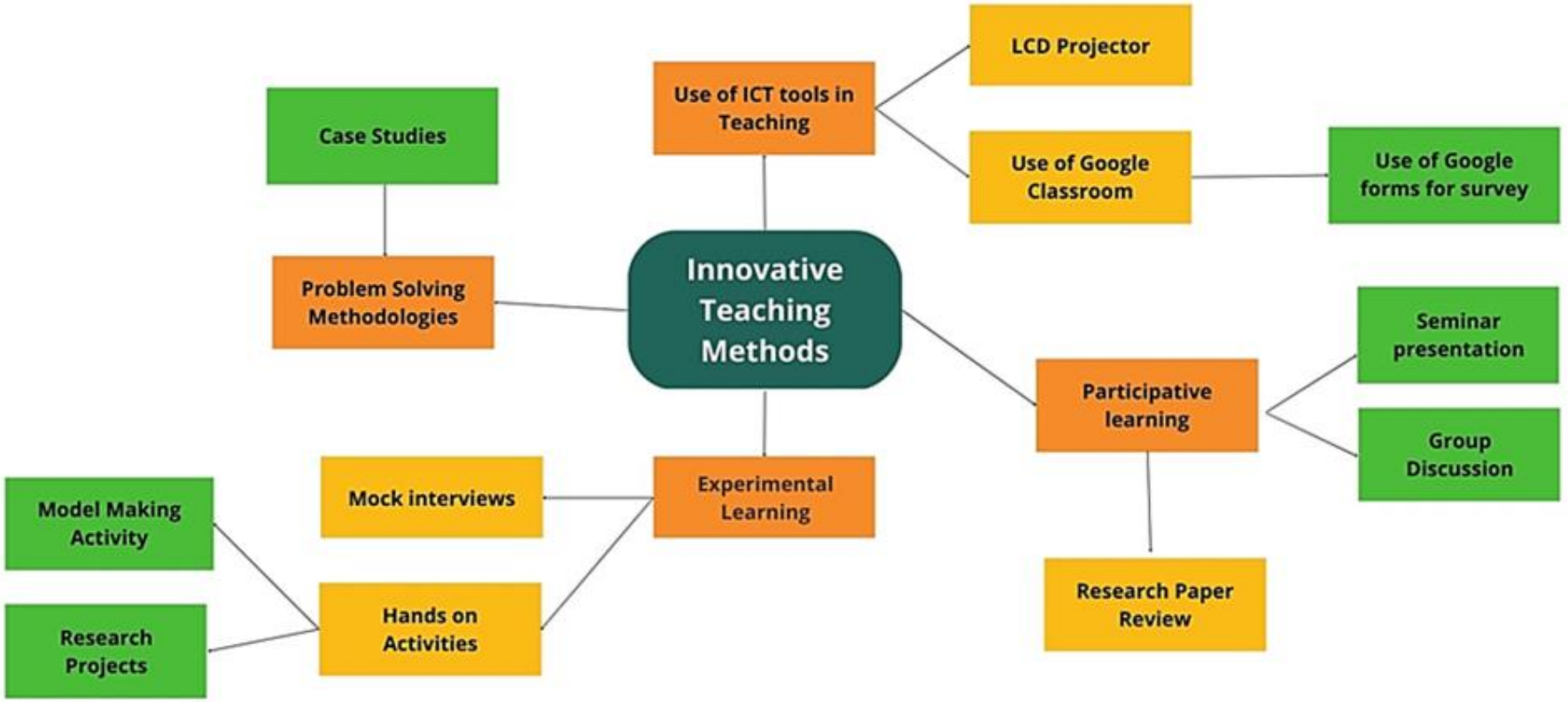
Innovations by the Faculty in Teaching and Learning

Clear Objectives and Adequate Preparation: The goals of innovative practices in the teaching-learning process are implemented to make the students get insight knowledge into the subjects, skill sets and also to obtain good grades in the End Semester Examinations.

To achieve this faculty members are consistently taking the following measures:

- ✓ Delivering lectures with the help of ICT tools.
- ✓ Conduction of Quiz programs, Group Discussions, Seminars, Discussion of recent trends and Cutting-edge technologies.
- ✓ Utilization of NPTEL/MOOC courses, You Tube Video lectures.
- ✓ Assignments and Case studies examples are given for better understanding of subjects.
- ✓ Undergoing Advanced Training Programmes
- ✓ Self-improvement through Institute – Industry Interaction
- ✓ Pursuing online courses
- ✓ Solving problems by mutual discussions
- ✓ Classes in the Library
- ✓ Teaching beyond class hours
- ✓ Real world examples are used for better understanding of the subjects.
- ✓ Industry in Class: By this method we brought several industrial and research organization persons from ISRO, DRDO, NAL, HAL, ADA and other leading private industry persons to improve the teaching learning process and to fulfill the curriculum gap between the industry and institute.

- ✓ Theory in Lab: By this method we take the students to the laboratories like aerodynamics lab, propulsion lab, structures lab and other related labs with relevant to their subjects for understanding the basic concepts
- ✓ Conduction of important events related to aerospace/aeronautical field.
- ✓ Real/Prototype aircraft, rockets and missile models are used for taking classes and demonstration purposes.



Aircraft/Drone Models:

Various aircraft and drone models that are available in the ***Aeronautical Engineering department*** for better understanding of the Program/courses.

FIGURE 1: F117 NIGHTHAWK

FIGURE 2:JAS 39 GRIPEN

FIGURE 3: MIG 29

FIGURE 4: F22 RAPTOR

FIGURE 5: F16 FIGHTING FALCON

FIGURE 6: F35 LIGHTNING II

FIGURE 7: SR-71 BLACK BIRD

FIGURE 8: DRONES

GSLV MK III and Akash Missile Models

The Department is having GSLV MK III and Akash Missile prototype models for study purposes.

FIGURE 9: GSLV MK III

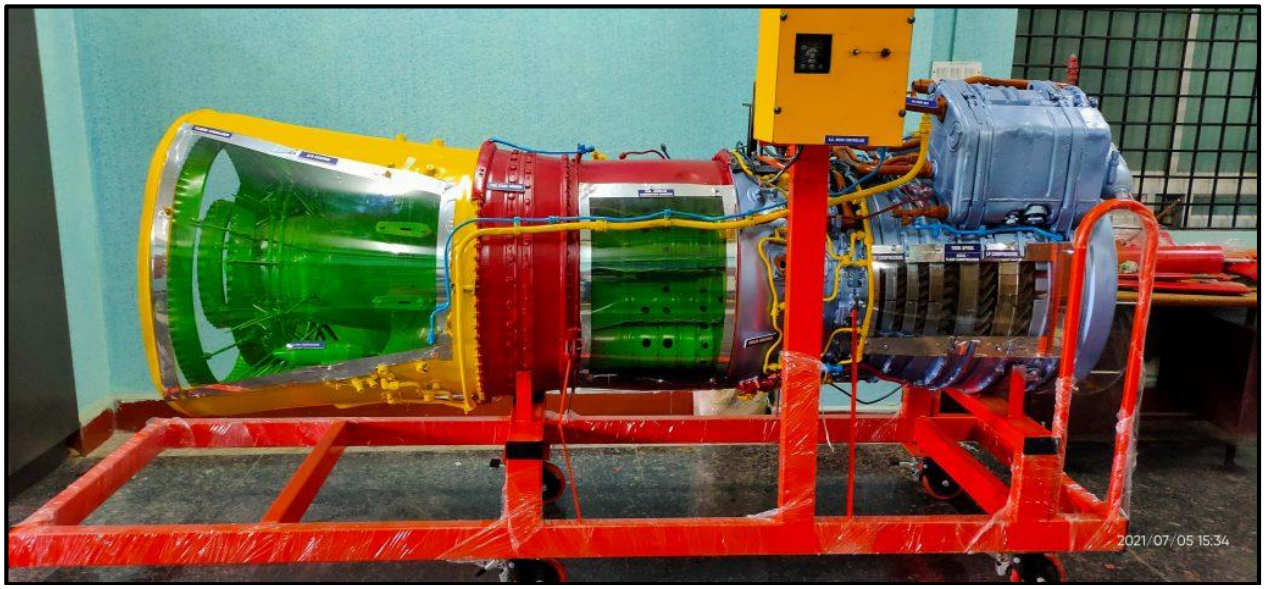
FIGURE 10: AKASH MISSILE

The Aeronautical Engineering department provides hands-on experience with ***MiG-27 variable sweep ground attack aircraft***. The aircraft was built by the Soviet Union and later license produced in India by Hindustan Aeronautics Limited. The students understand the complete airframe structure in the campus and study design requirements, control surfaces, provisions to mount subsystems as well as control systems.

FIGURE 11: MIG 27 Aircraft

Aircraft Engines

Tumansky R – 25 – 300 Series Supersonic Jet Engine The Russian Tumansky R – 25 – 300 Series Engine was built under license by HAL in India for MIG 21 BIS fleet aircraft. It is a supersonic jet engine with straight flow. The engine is having a feature of axial flow turbo jet engine with increased overall pressure ratio and airflow. It has a twin spool axial flow 8 stage compressor which comprises of 3 stage low pressure compressor and 5 stage high pressure compressor. The engine is having 10 can annular type combustion chambers. The fuel and air mixture inside the combustion chamber is ignited by torch ignitors. The reaction type turbine contains 2 stages, among that one is high pressure stage and another one is low pressure stage. The turbine inlet temperature is 1040 deg Celsius. It has a second fuel pump in the after-burner stage. The engine is having variable jet nozzle. The length of the engine is 4615 mm which can produce a maximum thrust of 40. 3 kN without afterburner and also it can produce a thrust of 69.6 kN with after burner switched on condition. The fuel used in this engine is Kerosene ATF, T1, TC1 and T2. The Tumansky R – 25 – 300 engine available in ACSCE was partially cutdown and projected in transparent mode for visualizing the inner parts of the engine. The engine compressor is attached with a variable RPM motor for demonstration purposes. It will be helpful for the students to get deep knowledge about the various components and working principle of the Jet engine in detail.



The Pratt & Whitney R-1830 Twin Wasp is a legendary 14-cylinder, air-cooled, radial piston engine, renowned for its reliability and power during the mid-20th century. It powered numerous iconic aircraft, most notably the Douglas DC-3 and the B-24 Liberator, and was produced in massive quantities, exceeding 173,000 units. The P&W R-1830 Engine available in ACSCE was fully cutdown and projected in transparent mode for visualizing the inner parts of the engine. It will be helpful for the students to get deep knowledge about the various components and working principle of the Piston engine in detail.

Flight Simulator

Smartfly Advent Flight Simulator:

The SmartFly Advent Flight Simulatoris an Open frame fixed base Aviation Ground flying trainer simulator run by custom build PCs (server client model) with 3-channel visual LCD/LED monitor for displaying visual environment with exclusive instrument gauges display. Single control yoke having continuously adjustable pitch/roll control and single rudder pedal for yaw control with differential brakes. The operational physical controls such as, switch pack, Throttle, Propeller and Mixture unit, Flaps with LED flap position indicator, landing Gear with position indicators, Trim wheel, Gauge control, digital radio avionics stack, GP500 GPS module and external Instructor operating station are available. The digital avionics radio stack gives the best training environment to practice radio and flight navigation procedures. Multiple instruments like ASI, VSI, AM, MM, AI, GH, etc are available. Moving map with flight review, vertical and horizontal flight path with ILS/VOR is available in the simulator. Flight planning and multi aircraft configuration can also be done with this simulator.

Highlights of the Simulator:

- Learn & practice the concept of maneuvering, Navigation under visual or instrument flight conditions.
- Innovative instructor station puts student /trainee into various situations including weather, system and instrument failures etc. to master the procedures.
- Digital Avionics Radio stack gives the best training environment to practice radio and Flight navigation procedures.
- Become proficient and master flying Visual Flight Rules /Instrument Flight Rules under Instrument meteorological conditions day or night to almost any airport in the world.

Fig. Flight Simulator in ACSCE

The list of innovative practices followed in teaching-learning processes is listed below:

S.No.	Innovations by the Faculty in Teaching and Learning
1.	Learning with the new technology
2.	Learning by attending conferences, webinars and seminars.
3.	Learning based on current Research Papers
4.	Learning by Industrial Visit (Class in Industry)
5.	Teaching through Alumni Interaction
6.	Student Seminars and Mini Projects
7.	Virtual Teaching - Learning Management System (LMS) (Google Class Room, Microsoft Teams, Zoom)
8.	Project Based Learning

1. Slotted Flap: [2024-2025]

Slotted Flap Model

Introduction to Slotted Flaps

Slotted flaps are a crucial type of high-lift device used in aircraft wings to improve lift at lower speeds. Unlike simple flaps, slotted flaps have a gap (slot) between the main wing and the flap, allowing air to flow through. This prevents boundary layer separation, thereby maintaining smooth airflow and reducing drag.

Working Principle

1. **Increased Lift** – The slot channels high-energy air from the lower surface of the wing to the upper surface, delaying airflow separation and increasing the effective lift coefficient.
2. **Reduced Stall Speed** – By improving lift, the stall speed of the aircraft decreases, allowing safer landings and takeoffs.
3. **Improved Control** – The design ensures a smoother transition between different phases of flight, making aircraft handling more efficient.

Model Features

- **Material:** The model in the image appears to be made of **wood** with a **metal support structure**, indicating durability for experimentation or demonstration.
- **Adjustable Flap Angle:** The presence of bolts and a rotating metal rod suggests that the flap angle can be adjusted, allowing for testing different configurations.
- **Aerodynamic Testing:** This model could be used in wind tunnel experiments to observe airflow behavior, pressure distribution, and lift enhancement.

Applications of Slotted Flaps

- **Commercial and Military Aircraft:** Used in transport and fighter aircraft for better takeoff and landing performance.
- **Experimental Aerodynamics:** Common in aerospace engineering labs for research on high-lift devices.
- **Flight Training Models:** Used for educational purposes in aerodynamics courses.

2. Experimental Fluid Flow setup: [2024-2025]

Note on the Experimental Fluid Flow Model

The model in the image appears to be a **fluid flow experiment setup**, likely designed to study pressure variations, flow rate, or pump performance. It consists of PVC pipes, pressure gauges, a pump, and a transparent reservoir.

Key Components and Functions:

1. **Water Reservoir (Plastic Container)** – Stores water and acts as the primary fluid source.
2. **Pump** – Connected at the bottom, used to circulate water through the system.
3. **PVC Piping Network** – Directs the water flow through the system, simulating a fluid flow experiment.
4. **Pressure Gauges** – Measures pressure at different points along the pipeline to analyze fluid behavior.
5. **Valves** – Allows control of flow direction and pressure regulation within the system.
6. **Electrical Wires** – Likely connected to a power source for operating the pump.

Possible Applications:

- Studying Bernoulli's principle and pressure losses in pipelines.
- Demonstrating pump efficiency and flow rate variations.
- Experimental validation of fluid mechanics theories.
- Understanding pressure drop across pipe fittings and valves.

3. Gas turbine Engine: [2024-2025]

Note on the Gas turbine engine Model:

The model shown in the images is a small-scale gas turbine engine prototype, likely designed for educational or experimental purposes. It consists of a metallic cylindrical structure with a compressor section, combustion chamber, and nozzle. The visible components include:

1. **Compressor Section** – The front of the model features a multi-blade impeller, which is used to compress incoming air, increasing its pressure before combustion.
2. **Combustion Chamber** – The central portion houses the combustion process, where fuel mixes with compressed air and ignites to produce high-temperature gases.
3. **Exhaust Nozzle** – The tapered rear section helps in expanding and accelerating exhaust gases to generate thrust.
4. **Wiring and Sensors** – The red wires connected to the model suggest that it might have electrical ignition or sensor-based monitoring for performance analysis.

Potential Applications:

- Used for research in jet propulsion systems.
- Serves as an educational tool for understanding gas turbine principles.
- Can be part of a small-scale propulsion system for drones or experimental aircraft.

4.Fighter Jet: [2023-2024]

Note on the Fighter Jet Model:

The image shows a **scaled-down RP (Replica) model of a fighter jet**, likely representing a modern multi-role combat aircraft. The fighter jet model shown in the image is **manufactured using Rapid Prototyping (RP) techniques**, which involve **3D printing** to create accurate scaled-down replicas of real aircraft.

Key Features & Observations:

1. **Design & Structure:**
   - The model features a **sleek aerodynamic shape**, indicative of a high-speed fighter jet.
   - It has **delta wings** with control surfaces, common in advanced fighter jets for better agility.
   - The **canards (small forward wings)** suggest it might be inspired by fighter jets like the Rafale.
2. **Landing Gear & External Features:**
   - The model includes a **nose landing gear**, possibly retractable in a real aircraft.
   - Small wingtip and fuselage-mounted structures resemble **missile or weapon mounts**.
   - The **Indian Air Force roundel (insignia)** is visible on the wings and fuselage.
3. **Possible Purpose of the Model:**
   - **Educational & Research Use** – Could be used for aerodynamics studies, wind tunnel testing, or flight dynamics research.
   - **Display or Exhibition Model** – Might be a handcrafted model for a project, exhibition, or military-themed showcase.
   - **3D Printed or Handmade Replica** – Likely made of lightweight materials such as foam or plastic.

Conclusion:

This RP model represents a **high-performance fighter jet**, showcasing realistic design elements. It is likely intended for **academic, research, or display purposes**, providing insights into the aerodynamics and structural design of modern combat aircraft.

5. Ionic Thruster: [2023-2024]

Note on the Ionic Thruster Model:

The model in the image represents an **Ionic Thruster**, a propulsion system that utilizes ionized air molecules to generate thrust. This setup is commonly used for educational demonstrations of electrostatic propulsion.

Key Components:

1. **High-Voltage Electrodes** – The system appears to have a setup where a high voltage is applied to ionize air molecules.
2. **Dielectric Tube** – The transparent cylindrical cover may act as a guiding structure to contain ionized particles.
3. **Power Supply and Switch** – The base houses a battery or high-voltage generator, along with a push-button switch for operation.
4. **Emitter and Collector Wires** – These thin wires or electrodes ionize air molecules and accelerate them to create thrust.

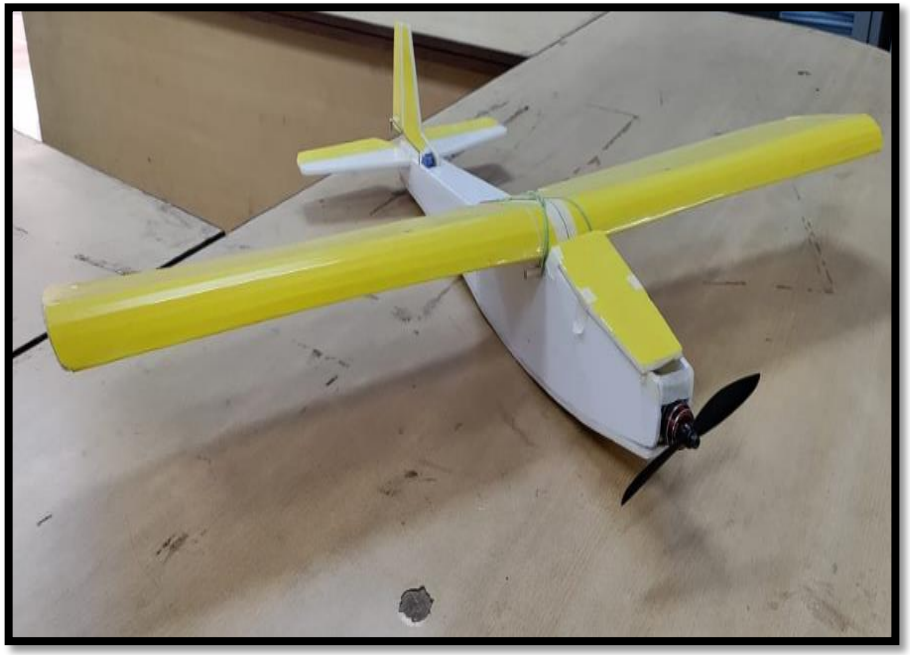
Working Principle:

- A high voltage is applied between electrodes.
- Air molecules near the emitter wire are ionized.
- These ions accelerate toward the collector, colliding with neutral air molecules and transferring momentum, producing a small thrust.

Applications:

- Used in space propulsion (e.g., deep-space probes).
- Demonstrates electrostatic thrust without moving parts.
- A useful educational tool for understanding ion propulsion technology.

6. Fixed-wing UAV: [2023-2024]



Note on the Fixed-wing UAV Model:

The image shows a **fixed-wing UAV (Unmanned Aerial Vehicle) model**, likely designed for research, testing, or academic purposes.

Key Features & Components:

1. **Wing Configuration:** The aircraft features a high-wing design with **long yellow wings**, providing stability and efficient lift generation. The wing structure suggests it is optimized for endurance and smooth flight.
2. **Fuselage:** The fuselage is made of a lightweight material, possibly **foam board or composite materials**, making it suitable for experimental and educational projects.
3. **Propulsion System:** The UAV is powered by a **single pusher-propeller motor**, mounted at the rear of the fuselage. This configuration reduces aerodynamic drag and improves efficiency.
4. **Tail Section:** The model has a **T-tail configuration**, which helps in improved pitch stability and better control in flight.
5. **Electronics & Control:** Though internal components are not visible, it likely contains **servo motors, an ESC (Electronic Speed Controller), a battery, and a flight controller** for stability and maneuverability.

Possible Applications:

- **Aerial Surveillance & Monitoring** – Can be used for remote sensing, mapping, or environmental monitoring.
- **Research & Development** – Suitable for aerodynamics testing, flight control algorithms, and UAV technology development.
- **Educational Purposes** – Ideal for student projects and training in aeronautical engineering or robotics.

7. Sounding Rocket Engine [2022-2023]

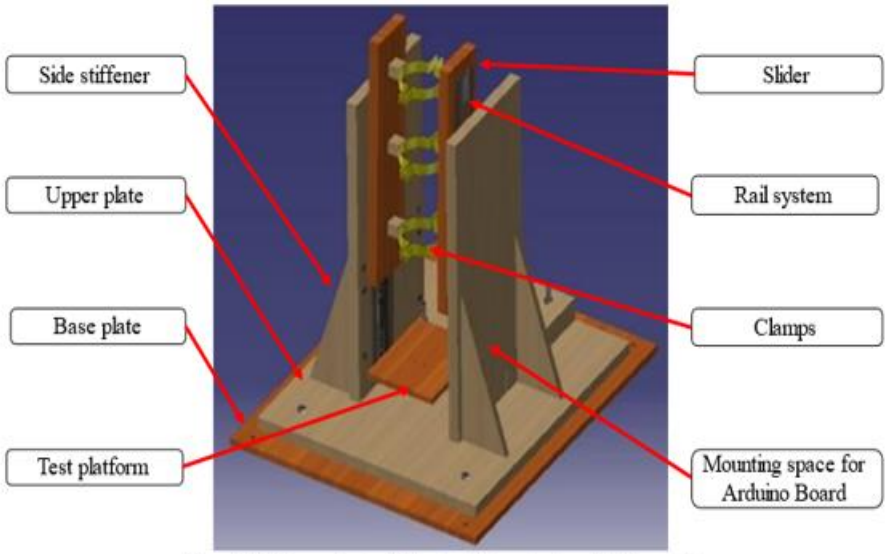


Fig. CAD model of Static Thrust stand (view 1).

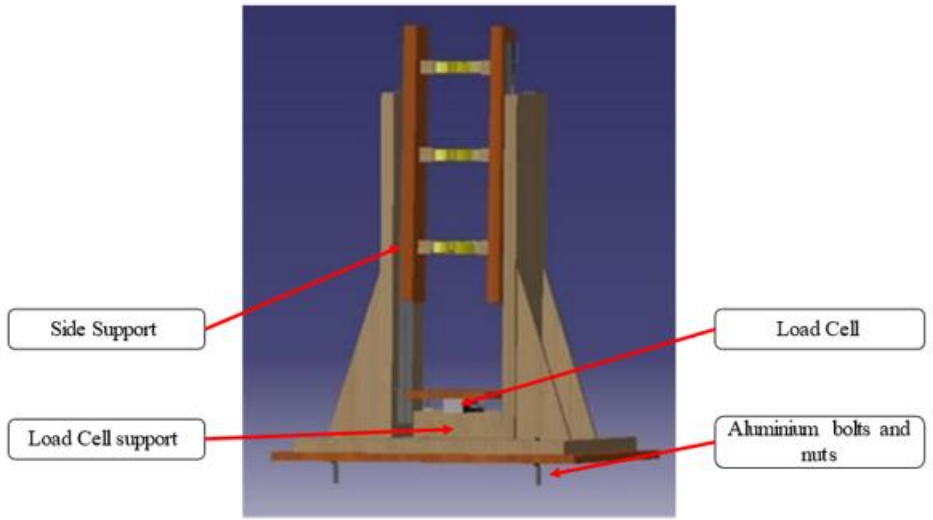


Fig. . CAD model of Static Thrust stand (view 2).

Fig. (a).

Fig. (b).

Fig. Actual Static thrust stand fabricated (view 1). (b) Actual Static thrust stand fabricated (view 2).

EXPERIMENTAL AND THEORITICAL DETAILS:

Propellant Casting:

The Rocket Engine features a single continuous casting that runs throughout the length of the motor casing in which the propellant will be stored. The material used is cardboard. Cardboard was found to provide sufficient strength to hold the cylindrical structure of the propellant, while also providing insulation to rocket motor casing. The Cardboard casting helps to retain the shape of the propellant grain and ensures erosion-free combustion. Table below provides details of the propellant casting.

Ignition system:

A Simple Ignition system is employed for igniting the propellant. The Ignitor is known as pyrotechnic ignitor in which a Nichrome wire of small gauge is short circuited with a battery (12 V). After Stripping insulation from electrical leads of two wires, the nichrome wire is short between the wires. The other ends of the wires are connected to a battery through a pair of needle nose pliers. A switch is also connected in series with the closed circuit. To improve ignition, matchsticks containing phosphorus are glued to the nichrome wire. When the Circuit is closed, the Nichrome wire heats up and in turn ignites the match resulting in a rapid high temperature flame. From several tests conducted, it is found that burning from the end cap delivers the best performance and as result, an aft internal ignitor configuration is employed in the rocket engine. Figure 18 illustrates the circuit diagram and the ignitor configuration employed.

Theoretical Result Analysis:

- Without Iron oxide catalyst, the engine produces negligible thrust when compared to the weight of the rocket engine. This highlights the oxidising nature of the iron oxide.
- From the second and third static fire test, it is found that more chamber pressure is developed in a bell nozzle configuration than in a conical nozzle configuration. However more thrust is produced by conical nozzle than the bell nozzle for the same amount of propellant burnt. The parameter effecting the above characteristic is the throat area since the throat area of conical nozzle is larger than that of the bell nozzle.
- The specific impulse across the multiple static fire tests conducted are identical. However, the one with higher thrust rating is preferable for coasting while the one with higher mass flow rate is preferable during launch.
- It has been observed that higher thrust yields faster burn time while a lower thrust yields a slower burn time. Both conditions are not suitable for long range launches.
- Throughout the multiple static fire tests, no leakage of propellant was encountered from the end cap and from the nozzle joint.

The Rocket engine did not encounter structural damage as no cracks were discovered, although it did suffer minor corrosion. The Rocket engine also withstood thermal expansion and thermal loads.

Experimental Result Analysis:

For the experimentation, the setup was made to calculate the downward force or pressure exerted by the SRB onto the pressure sensor which is the load cell. The load cell was tared to zero after placing all the loads on it, later only pure downward force was calculated.

Several tests were performed from which only the optimum tests are mentioned in this paper as not all the test were perfect. hence after the fire test, the burn time was recorded and using the same we calculated the maximum thrust produced using our Theoritical calculation procedure and formulae.

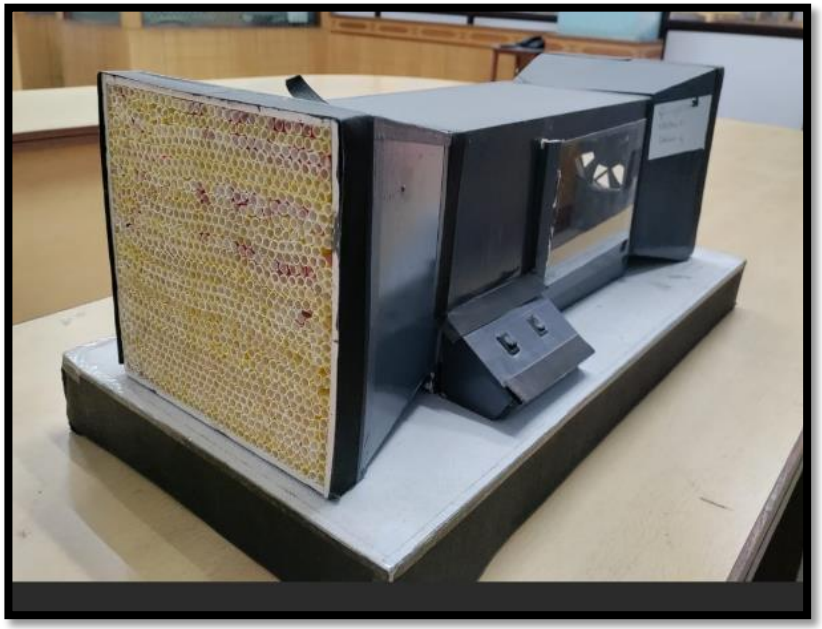
During the experimentation the load cell would provide the load values which was recorded in the Arduino software in real time. The thrust values were calculated in terms of 2 decimal places and the same were getting plot in the same software in real time

The graphs mentioned in this paper are optimised versions of the real time curves as the timestamps were in terms of milliseconds. The optimum timestamps such as an interval of 0.5, 0.2 …sec was selected to plot the accurate data points and to get a smooth slope or curve in MATLAB.

Using MATLAB software, curve fitting for the real time curve data points was done. The already known data points were linearly interpolated and the curve was adjusted for building new data points which would give more accurate data points from known data points; hence the curve was plotted according to the interpolation.

- Later both the Theoretical and experimental calculations were compared to obtain the accuracy of the SRB. From the experimental curves we conclude that our SRB burns in progressive-neutral fashion.
- From test 1 there was no optimum performance of SRB producing no thrust for 30 sec. while in test 2 there were modifications done to propellent and ratios, which lasted for 5 sec, the theoretical thrust was around 123 N and the experimental peak thrust was 130 N.
- Hence from this we concluded the theoretical and experimental results were matching and the SRB was performing in optimal conditions for respective propellent ratios.
- All the test’s results were analysed in the same procedure as mentioned above and the optimised performance results are mentioned in this paper.

8. Wind Tunnel Model [2022-2023]



This is ***a model of a wind tunnel***, which is a device used in aerodynamics to study the effects of air moving over objects. Wind tunnels are commonly used in aviation, automotive design, and environmental studies to test how different structures interact with airflow.

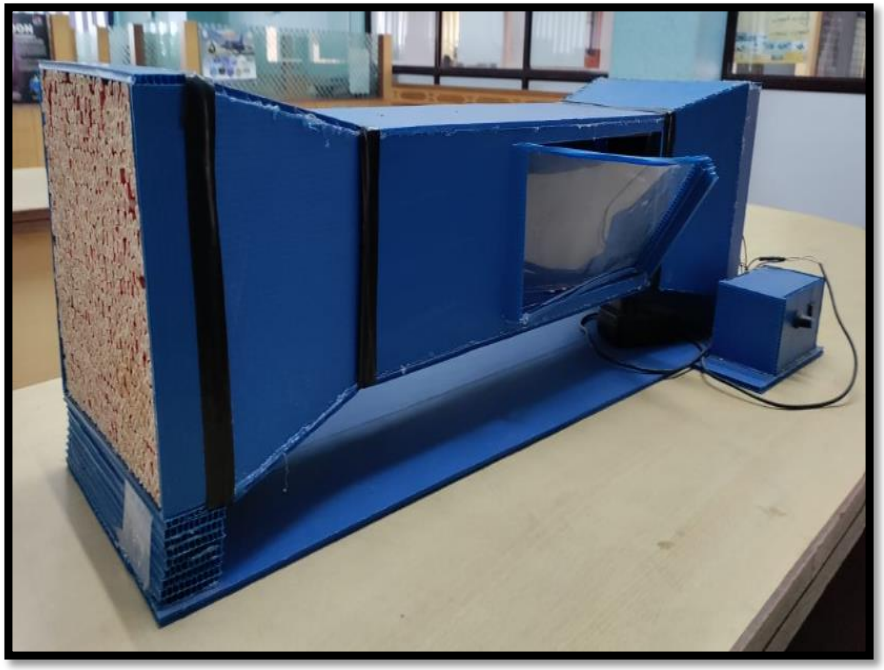
Features of the Wind Tunnel Model:

1. **Test Section:** The central part of the model appears to be the test section where objects are placed for airflow analysis. There is a small transparent window, possibly for observation.
2. **Fan or Airflow Generator:** The model likely contains a fan or another mechanism to generate airflow, simulating real-world wind conditions.
3. **Honeycomb Flow Straightener:** The front part of the model has a honeycomb-like structure, which helps in directing and smoothing the airflow to reduce turbulence before it enters the test section.
4. **Control Panel:** The angled panel with switches suggests that the model has an operational component for controlling airflow speed or other parameters.
5. **Base Structure:** The entire model is mounted on a solid base, providing stability and making it easier to transport or demonstrate in a lab setting.

Purpose:

- Used for educational demonstrations in aerodynamics and fluid mechanics.
- Helps students or researchers understand airflow behavior over various objects.
- Can be used for small-scale testing of aerodynamic models such as airfoils or small vehicle prototypes.

9.Wind tunnel: [2022-2023]



Note on the wind tunnel Model: [2022-2023]

This ***image showcases a small-scale wind tunnel model,*** likely designed for educational or experimental purposes in aerodynamics. The wind tunnel is painted blue and has a structured design to facilitate controlled airflow for testing purposes.

- **Key Features:**

Test Section:

- The transparent window in the middle allows for visual observation of objects placed in the test area.
- This section is where air passes over an object to analyze aerodynamic properties.

Convergent and Divergent Sections:

- The tapered design at both ends helps regulate airflow, ensuring smooth and directed movement.
- The converging section accelerates the airflow before reaching the test section, while the diverging section helps maintain stable pressure.

Control Unit:

- A separate box with switches and a knob is connected to the tunnel, possibly to regulate airflow speed.
- Wires running from the control box indicate an electric fan system inside the wind tunnel.

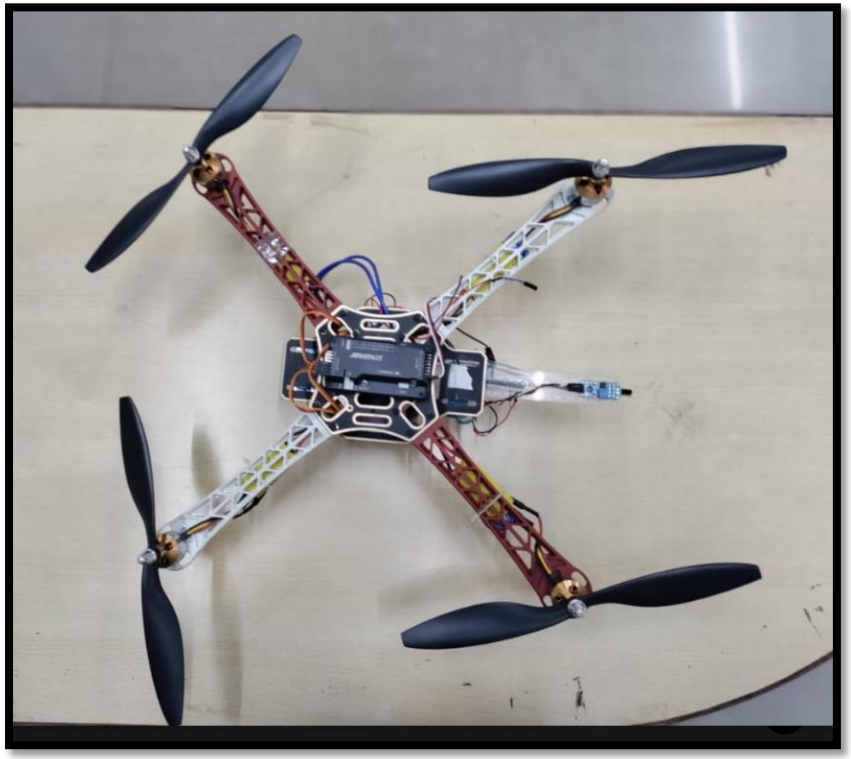
Construction:

- The wind tunnel appears to be made from lightweight materials such as plastic or cardboard, making it suitable for educational demonstrations.
- The design is reinforced with black tape or edges to ensure structural integrity.

Purpose and Applications:

- Used in educational settings to teach fluid mechanics and aerodynamics.
- Helps students and researchers study airflow behavior over small models.
- Can be used to test different shapes and their aerodynamic efficiency, such as airfoils, car models, or small aircraft prototypes.

10. Quadcopter Drone: [2022-2023]



Note on the Quadcopter Drone Model:

The images show a **quadcopter drone model.** Here are some key observations about the drone:

Drone Structure & Components:

1. **Frame:** The drone has a standard X-frame design, typically used for stability and efficient aerodynamics. The arms are made of a lightweight material (possibly plastic or carbon fiber) with red and white color coding, likely for orientation purposes.
2. **Motors & Propellers:** It has **four brushless motors**, each connected to a **two-blade propeller**. The black propellers are optimized for lift and stability.
3. **Flight Controller:** The center of the drone houses a **flight control board**, which is responsible for stabilizing and maneuvering the drone. The board appears to be connected with multiple electronic components.
4. **Electronic Speed Controllers (ESCs):** Visible wiring suggests that ESCs are connected to the motors, regulating their speed and power distribution.
5. **Sensors & Modules:** A small sensor module (possibly an **ultrasonic sensor or GPS module**) is mounted on the front, likely used for altitude control or navigation.
6. **Battery & Power System:** The drone appears to have a **power distribution board (PDB)**, which distributes power from the battery to different components. The battery is not visible in the image but is likely placed underneath or on top.

Possible Applications:

- **Research & Development:** The drone seems to be a DIY or custom-built model, likely used for academic or research purposes in aeronautical or robotics projects.
- **Autonomous Navigation:** If integrated with GPS or AI-based control, it could be used for autonomous missions.
    - **Surveillance & Aerial Photography:** With the addition of a camera, it can be utilized for aerial mapping or security purposes.

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Department of Aeronautical Engineering

List of Short term Courses/ Workshops/ Soft Skills Training/ Value-Added Courses

Organized for Faculty development, Student enrichment, and Curriculum Support: Academic Year 2024-25

Sl. No.	Date	Course Title	Target Audience	Duration	Speaker	Outcome / Skills Gained
1	28/10/2024 to 29/10/2024	Technical Symposium: Kalam Day-93rd Birth Anniversary of Dr.APJ Kalam	2nd, 3rd & 4th Year Students	2 days	Dr.Saji Devadathan Professor-IIT Madras, Retd Scientist, CSIR-NAL, DRDO	➢ Exposure to emerging technologies, current research trends, and innovative engineering solutions beyond the curriculum. ➢ Students learn to clearly present their technical ideas through paper/poster presentations, project demos, and technical talks. ➢ Students involved in organizing the symposium develop planning, coordination, budgeting, and time-management skills. ➢ Presenting ideas before judges and peers improves self-confidence and stage presence.

						➢ Encourages adherence to ethical standards in presenting original work and acknowledging contributions.
2	09/12/2024 & 10/12/2024	Student Skill development program on UAV Design and Development-using a Multi Physics Simulation Platform	3rd & 4th Year Students	2 days	Ms.Shalini & Team, Founder & CEO, Ozhli Academy of Science, Bengaluru	➢ Gained knowledge of UAV components such as frame, motors, propellers, control systems, and payload integration. ➢ Acquired hands-on experience in simulation platforms (e.g., ANSYS, COMSOL, MATLAB/Simulink) for analyzing aerodynamic behavior, structural response, and electronic subsystems. ➢ Understood the integration of multiple domains—mechanical, electrical, electronics, and software engineering—in UAV development. ➢ Gained insights into real-world UAV applications in defense, agriculture, surveillance, disaster management, and logistics. ➢ Sparked interest in pursuing advanced studies, capstone projects, or research in UAVs, robotics, and aerospace engineering.

3	17/12/2024	Workshop - Career Launchpad: Essential Soft Skills for Placement Success.	3rd & 4th Year Students	1 day	Dr. Loganathan V CEO-ISO UNIV Bamgalore	➢ Improved verbal and written communication essential for interviews, group discussions, and professional interactions. ➢ Learned how to work effectively in teams, handle conflicts diplomatically, and build positive professional relationships. ➢ Gained confidence in speaking in front of an audience, structuring presentations, and engaging listeners. ➢ Developed techniques to prioritize tasks, manage academic and placement preparation schedules efficiently. ➢ Learned structured approaches to tackle situational and aptitude-based problems common in placement processes. ➢ Encouraged to take ownership, lead small tasks or activities, and present oneself as a reliable professional. ➢ Created professional resumes, practiced mock interviews, and refined answers to HR and technical questions.
						➢ Students learn to translate abstract concepts into tangible models or detailed

4	28/12/2024	Prototype Exhibition - Idea Showcase: Demo Day/Exhibition/Poster Presentation of Ideas/PoC	2nd, 3rd & 4th Year Students	1 day	Moderators: Dr.P.Theerthamalai, Former Director-DRDL Prof.P.Soma Professor-AE, ACSCE	posters, showcasing innovation and practical thinking. ➢ Encourages research-based learning, problem identification, solution framing, and design process understanding. ➢ Students develop original ideas and explore creative approaches to solving real-world problems. ➢ Learners gain skills in clearly and confidently presenting technical content, both visually and verbally. ➢ Working in groups promotes collaboration, delegation of tasks, and peer learning. ➢ Managing limited time and resources to build working prototypes fosters organizational and time-management skills.
						➢ Acquired hands-on experience with ANSYS modules such as Structural Analysis, Thermal Analysis, Fluid Flow (CFD), and Modal Analysis. ➢ Gained the ability to apply engineering fundamentals (mechanics,

5	03/04/2025 & 05/04/2025	Workshop - Value Added Course on ANSYS: A Skill Training Program	3rd Year Students	2 days	Mr.Ravindra Bucherla Application Engineer, ARK Info Solutions	thermodynamics, fluid dynamics) to real-world simulations. ➢ Learned how to model, mesh, simulate, and interpret results for components and systems under various loading conditions. ➢ Developed skills to analyze engineering problems and derive optimized design solutions using computational methods. ➢ Analyzed the response of different materials under stress, strain, and thermal loads, enhancing material selection knowledge. ➢ Gained confidence to take up mini and major projects involving simulation and analysis as part of academic or internship work.

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ACS College of Engineering

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(Approved by AICTE, New Delhi, Govt. of Karnataka, Affiliated to Visvesvaraya Technological University, Belagavi)

Department of Aeronautical Engineering

List of Innovative Teaching Implemented for Faculty development, Student enrichment, and Curriculum support : Academic Year 2024-25

[Industrial Visits, Seminars & Guest Lectures]

Sl. No.	Date	Course Title	Target Audience	Duration	Speaker	Outcome / Skills Gained
1	27/08/2024	Technical Talk - Skill Development Program for Young Engineers-An orientation session	2nd, 3rd & 4th Year Students	1 day	Prof.P.Soma & Dr.G.Ramanan Professor, AE, ACSCE	➢ Students gained insights into current advancements in engineering domains, industry expectations, and the skills in demand. ➢ Inspired students to actively engage in technical training, certifications, and project-based learning to build career-relevant competencies. ➢ Emphasized the importance of continuous learning, adaptability, and skill enhancement in a fast-evolving engineering landscape. ➢ Boosted student confidence to take proactive steps in career planning,

						including internships, certifications, and networking. ➢ Introduced students to the expectations of workplace behavior, ethics, and accountability early in their academic journey.
2	12/09/2024	Technical Talk - Computational Fluid Dynamics: A design tool for aerospace vehicles	3rd & 4th Year Students	1 day	Dr.R.Krishnamurthy, SC 'H' Group Director—Design DRDL, Hyderabad	➢ Students understood the role of CFD in simulating fluid flow, heat transfer, and aerodynamic forces in aerospace vehicle design. ➢ Strengthened theoretical understanding of fluid dynamics, turbulence, boundary layers, and pressure distributions in aerospace applications. ➢ Gained insights into how CFD is used in the design of aircraft wings, fuselage, propulsion systems, and thermal management in spacecraft. ➢ Understood how engineers use CFD to iterate and optimize designs before physical prototyping, saving cost and time. ➢ Gained knowledge about career paths in simulation engineering, R&D, aerospace companies, and design consultancy roles.

						➢ Encouraged students to take up CFD-based projects or research work related to aerospace, automotive, and thermal systems.
3	17/09/2024	Career Guidance Program - Skybound: Mastering Drone Pilot Skills for DGCA Licensing	3rd & 4th Year Students	1 day	Mr.Krishore (Retd-NAL), Dhanwantari Drone pilot academy, Bangalore	➢ Gained comprehensive knowledge about the Directorate General of Civil Aviation (DGCA) guidelines and compliance requirements for drone operations in India. ➢ Learned about different types of drones, their components, flight mechanics, and control systems. ➢ Developed skills in planning drone flight missions for surveillance, mapping, photography, and delivery applications. ➢ Explored career opportunities in drone operations across industries like agriculture, logistics, surveillance, cinematography, and disaster management. ➢ Gained exposure to drone-based data acquisition and basic GIS/mapping tools used in aerial surveying. ➢ Enhanced soft skills such as communication, coordination, and

						teamwork during field training and group tasks.
4	30/09/2024	Technical Seminar - Design Innovation for successful career in the field of Aeronautics, Space and Defense.	3rd & 4th Year Students	1 day	Mr.Dhanish Abdul, Space System Engineer, SS Technologies.	➢ Gained insights into creative problem-solving and innovative design processes specific to high-tech fields like aeronautics and defense systems. ➢ Strengthened conceptual knowledge in areas such as aerodynamics, propulsion, structural analysis, and systems integration. ➢ Learned about cutting-edge technologies such as hypersonics, UAVs, satellite systems, and AI applications in aerospace and defense. ➢ Understood the critical technical and soft skills required to succeed in government and private sector roles within space and defense domains. ➢ Realized the integration of mechanical, electrical, electronics, and computer engineering in modern aeronautical and space system designs. ➢ Improved ability to understand, question, and discuss technical concepts in a professional seminar setting.

5	25/10/2024	Career Guidance Program - Entrepreneurship and Innovation as a career opportunity	4th Year Students	1 day	Mr.Lokesh B S, Startup Consultant, Entrepreneur Agastya Academy	➢ Gained foundational knowledge about entrepreneurship, including idea generation, business models, and startup ecosystems. ➢ Learned how to think innovatively, identify market gaps, and develop problem-solving skills for real-world challenges. ➢ Understood the stages of a startup – from ideation and validation to funding, scaling, and exit strategies. ➢ Learned about various schemes, incubators, accelerators, and funding opportunities available through organizations like Startup India, MSME, and Atal Innovation Mission. ➢ Understood the basics of managing finances, investments, and risks associated with starting a business. ➢ Strengthened collaboration, leadership, and decision-making abilities through group activities and discussions.
						➢ Observed live industrial manufacturing operations, including design, fabrication, assembly, and quality control processes.

6	13/11/2024	Industrial Visit - Industrial Visit to CADMAXX Pvt Ltd (Manufacturing Unit-I)	2nd Year Students	1 day	CADMAXX Pvt Ltd, Bengaluru	➢ Gained insight into how Computer-Aided Design (CAD) and Computer-Aided Manufacturing (CAM) tools are integrated in real-time industrial applications. ➢ Understood standard industrial procedures, safety protocols, and production workflows followed in professional manufacturing units. ➢ Observed quality control measures, testing equipment, and techniques used to ensure precision and reliability of manufactured components. ➢ Understood the technical and soft skills expected by the industry, and recognized areas to improve for better employability. ➢ Gained clarity on various roles in the design and manufacturing sector, and interacted with engineers and professionals for career guidance.
						➢ Gained in-depth understanding of industry-relevant CAD (Computer-Aided Design) and CAM (Computer-Aided Manufacturing) software and tools used in modern engineering.

7	14/11/2024	Seminar - CAD/CAM Mastery: Bridging Academia and Industry with Smart Skills	2nd, 3rd & 4th Year Students	1 day	Mrs. Priyanka N B, Central Manager, EduCADD Ltd	➢ Learned about the latest trends, standards, and expectations in the design and manufacturing sectors related to CAD/CAM technologies. ➢ Understood how academic concepts in design and manufacturing are applied in real-world industrial scenarios through CAD/CAM integration. ➢ Acquired awareness of smart manufacturing practices, including automation, CNC programming, simulation, and 3D modeling. ➢ Improved analytical and design thinking skills by understanding how CAD/CAM tools help solve complex engineering problems. ➢ Discovered various career opportunities in mechanical design, aerospace, automotive, industrial automation, and tool design fields.
						➢ Gained direct exposure to the processes involved in the design, fabrication, integration, and testing of satellites.

8	19/12/2024	Industrial Visit - Industrial Visit to U R Rao Satellite Centre, ISRO, Bangalore	3rd Year Students	1 day	U R Rao satellite center, ISRO, Bengaluru 560017	➢ Observed high-end technologies such as cleanroom environments, thermal testing chambers, and vibration testing facilities used in satellite manufacturing. ➢ Developed a strong understanding of India's achievements in space science and technology through ISRO's missions and innovations. ➢ Explored various career paths in ISRO and other space research organizations, along with the qualifications and skills required. ➢ Realized the importance of collaborative efforts among engineers, scientists, and technicians in successful satellite development.
						➢ Gained comprehensive knowledge about higher education options in countries like the USA, UK, Canada, Germany, Australia, and others specifically for aeronautical and aerospace engineering. ➢ Learned about eligibility criteria, standardized tests (GRE, TOEFL, IELTS), academic prerequisites, and documentation

9	12/12/2024	Higher Education Awareness - Career Counseling session on"Aspects and future overseas studies for Aeronautical Engineering Students	4th Year Students	1 day	Mr Krushna Adhalge Vice President Ashiraj overseas Education consultant Pvt Ltd Bangalore	needed for admissions to international universities. ➢ Discovered top-rated programs and universities offering specialized courses in areas such as aerospace propulsion, avionics, UAV systems, and space systems engineering. ➢ Learned about potential career paths after overseas education, including job opportunities, research roles, and doctoral studies. ➢ Inspired to plan their undergraduate years strategically with a focus on GPA, projects, internships, and research to align with international admission standards.
						➢ Gained awareness of international education systems, top destinations, and popular courses available for higher education abroad. ➢ Understood how to shortlist universities based on academic profile, course relevance, global rankings, and research opportunities.

10	19/03/2025	Seminar - Awareness and Support Program on Higher Education in abroad	2nd & 3rd Year Students	1 day	Mr.Ameet Rathore, Director- The Big Leap, Bengaluru	➢ Became informed about various scholarships, grants, student loans, and financial planning for studying abroad. ➢ Understood how overseas education can open up global career opportunities and pathways into research, entrepreneurship, and advanced studies. ➢ Became familiar with available support systems such as university counseling centers, alumni networks, and educational consultants.
11	20/03/2025	Seminar - Alumni Guest Lecture: UAV Piloting Skills and Career Insights	3rd & 4th Year Students	1 day	Mr.Hemanth G Reddy, Drone Pilot, Vectorwings Technologies	➢ Benefited from the alumni's personal journey, career progression, challenges, and success stories, offering relatable and motivating guidance. ➢ Learned about the technical and soft skills in demand—such as drone programming, data analysis, spatial awareness, and teamwork. ➢ Gained clarity on what employers and organizations expect from UAV professionals in terms of knowledge, certifications, and responsibility.

						➢ Encouraged to pursue formal training, certifications, and hands-on practice to become industry-ready UAV pilots. ➢ Gained insights into the fundamental principles of drone operation, including manual and autonomous piloting techniques.
12	22/03/2025	Industrial Visit - Industrial Visit to Bangalore Aircraft Industries PVt Ltd, Bengaluru	3rd Year Students	1 day	Mr.Girish K E, Co-Founder- BAIL, Ex.NAL	➢ Gained first-hand knowledge of how light aircraft are designed, assembled, tested, and maintained in a real industrial setup. ➢ Related classroom knowledge of aerodynamics, materials, propulsion, and structural analysis to practical aerospace industry applications. ➢ Understood the complete workflow—from design and prototyping to production and testing of aircraft. ➢ Gained insights into DGCA regulations and the importance of certification and compliance in aircraft manufacturing and maintenance. ➢ Observed the use of advanced tools, machinery, and software used in aircraft fabrication and testing processes.

13	16/04/2025	Seminar - Seminar on Intellectual Property Rights and IP Management for startups	3rd Year & 4th Year Students	1 day	Ms.Lokesh B S, Entrepreneur, Founder- Agastya Academy	➢ Gained foundational knowledge about various types of intellectual property—patents, copyrights, trademarks, designs, and trade secrets. ➢ Understood how protecting intellectual property is crucial for safeguarding innovations and gaining a competitive edge in startups. ➢ Learned about the process of filing patents in India and internationally, including documentation, timelines, and legal considerations. ➢ Became familiar with national and international IPR laws relevant to technology and business sectors. ➢ Gained awareness of government initiatives, such as Startup India and support schemes for patent filing and IP awareness.
						➢ Gained a clear understanding of the structure, syllabus, and selection process of the UPSC Engineering Services Examination (ESE/IES).

14	25/04/2025	Seminar - Career Guidance Program: Building your future in Engineering Services	4th Year Students	1 day	Mr.Girish K E, Director -BAIL	➢ Discovered career prospects in various government departments like Indian Railways, CPWD, MES, BRO, and other technical services. ➢ Learned effective time management techniques, study plans, and the importance of mock tests, coaching, and self-study resources. ➢ Understood the long-term benefits of government engineering services including job security, career progression, and societal impact. ➢ Encouraged to set high aspirations and develop a disciplined approach toward achieving career goals in engineering services.
						➢ Gained first-hand knowledge of how light aircraft are designed, assembled, tested, and maintained in a real industrial setup. ➢ Related classroom knowledge of aerodynamics, materials, propulsion, and structural analysis to practical aerospace industry applications.

15	05/04/2025	Industrial Visit - Industrial Visit to Bangalore Aircraft Industries PVt Ltd, Bengaluru	2nd Year Students	1 day	Mr.Girish K E, Co-Founder- BAIL, Ex.NAL	➢ Understood the complete workflow—from design and prototyping to production and testing of aircraft. ➢ Gained insights into DGCA regulations and the importance of certification and compliance in aircraft manufacturing and maintenance. ➢ Observed the use of advanced tools, machinery, and software used in aircraft fabrication and testing processes.
16	06/05/2025	Seminar - Career Guidance Program: Opportunities for Aerospace Engineers through GATE	4th Year Students	1 day	Mr.Ashok Naidu, Co-Founder, GATE Aerospace Academy, Hyderabad	➢ Gained clarity on the GATE (Graduate Aptitude Test in Engineering) exam pattern, eligibility, syllabus, and its specific relevance to aerospace engineering. ➢ Learned about admissions into premier institutions like IITs, IISc, and foreign universities through GATE scores for M.Tech./MS/Ph.D. programs. ➢ Discovered career prospects in Public Sector Undertakings (PSUs) such as DRDO, ISRO, HAL, BHEL, and others that recruit through GATE. ➢ Received tips on time management, subject-wise preparation, use of standard

						reference materials, and practice tests for success in GATE. ➢ Encouraged to set clear academic and career goals and develop a structured approach toward exam preparation and career development in aerospace engineering.
17	21/05/2025	Industrial Visit - Industrial Visit to Hindustan Aeronautics Limited, Bengaluru	3rd Year Year Students	1 day	HAL Old Airport Rd, PO, Marathahalli, Bengaluru- 560037	➢ Gained first-hand experience of aircraft production processes including assembly, structural integration, engine fitting, and system installation. ➢ Learned how theoretical concepts in aerodynamics, propulsion, materials science, and avionics are applied in real-world aircraft design and development. ➢ Understood HAL's contributions to national defense and aerospace innovation through the production of aircraft like Tejas, Dhruv, and Sukhoi variants. ➢ Realized how multidisciplinary teams collaborate to manage complex aerospace projects, from design to delivery. Discovered pathways to careers at HAL, ISRO, DRDO, and other aerospace and

						defense organizations, including internships and graduate roles.
18	23/05/2025	Guest Lecture - Composite Lab Inauguration and Technical Talk on Revolution of Composites in Aircraft Industry	2nd & 3rd Year Students	1 day	Dr.Madeva Nagaral, Manager (ARDC), HAL Bangalore	➢ Gained foundational knowledge about composite materials, their types (e.g., carbon fiber, glass fiber), and their significance in aerospace applications. ➢ Learned how composites are revolutionizing aircraft structures by offering high strength-to-weight ratios, corrosion resistance, and fuel efficiency. ➢ Became acquainted with composite fabrication tools, curing methods, and testing equipment introduced during the lab inauguration. ➢ Understood various composite processing methods such as lay-up techniques, resin transfer molding, autoclaving, and vacuum bagging. ➢ Learned how composites contribute to greener aviation by reducing fuel consumption and enabling lightweight aircraft structures. ➢ Encouraged to develop hands-on skills in composite fabrication and testing,

						preparing for roles in materials engineering and aircraft design.

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Department of Aeronautical Engineering

List of Short term Courses/ Workshops/ Soft Skills Training/ Value-Added Courses

Organized for Faculty development, Student enrichment, and Curriculum Support: Academic Year 2023-24

Sl. No.	Date	Course Title	Target Audience	Duration	Speaker	Outcome / Skills Gained
1	22/08/2023 & 23/08/2023	Workshop - Two Days Hands on Training on "Fundamentals of CFD using ANSYS"	3rd year Students	2 days	Mr.Praveen &Mr Prashanth JRF, ACSCE, Bengaluru	➢ Gained theoretical knowledge of Computational Fluid Dynamics (CFD), including governing equations, boundary conditions, and fluid flow physics. ➢ Developed hands-on skills in navigating and operating ANSYS Fluent and ANSYS Workbench environment for simulation tasks. ➢ Learned to create and import 2D/3D geometry and perform structured/unstructured meshing using ANSYS Meshing tools. ➢ Acquired practical experience in setting up CFD simulations—defining materials,

						models (laminar/turbulent), solver settings, and boundary conditions. ➢ Enhanced analytical thinking by interpreting simulation results and comparing with theoretical/experimental data.
2	6/12/2023 to 9/12/2023	Technical Event - Kalam Day-92nd Birth Anniversary of Dr.APJ Kalam	2nd, 3rd & 4th Year Students	4 days	Dr.Sita Rama Raju, Former Director (Retd), ADA	➢ Exposure to emerging technologies, current research trends, and innovative engineering solutions beyond the curriculum. ➢ Students learn to clearly present their technical ideas through paper/poster presentations, project demos, and technical talks. ➢ Students involved in organizing the symposium develop planning, coordination, budgeting, and time-management skills. ➢ Presenting ideas before judges and peers improves self-confidence and stage presence. ➢ Encourages adherence to ethical standards in presenting original work and acknowledging contributions.

3	19/01/2024	Workshop - Workshop on Virtual Reality in Aircraft Engineering	4th Year Students	1 day	Mr.Mallikarjun Kulkarni, Tech Fortune, Bengaluru	➢ Understood the fundamental concepts and components of Virtual Reality technology and its significance in engineering education and design. ➢ Experienced immersive simulations related to aircraft systems, aerodynamics, cockpit environments, and maintenance procedures. ➢ Gained insights into how VR is used in aircraft design, pilot training, structural inspection, and safety analysis in the aerospace industry. ➢ Improved ability to visualize complex 3D aircraft structures, internal components, and fluid flow patterns within virtual environments. ➢ Developed skills at the intersection of aerospace engineering, software simulation, and digital technology.
					Dr.S.N. Omkar, Professor & Chief Research Scientist, IISc Bengaluru, Prof.P.Soma, Former	➢ Gained a comprehensive understanding of Unmanned Aerial Vehicle (UAV) classifications, subsystems, and mission-specific configurations.

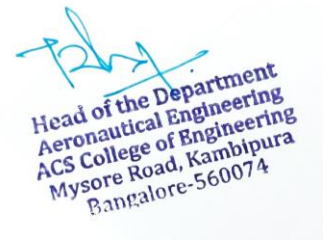
4	5/02/2024 to 10/02/2024	Atal Sponsored Faculty Development Program - Emerging Technologies in Drone Design and Development	FDP for Faculties	1 week	Group Director, ISTRAC, ISRO, Dr.Ashok G Matani, Professor (Retd), Govt College, Jalgaon, Dr Ramesh Kestur, Professor, International Institute of Information Technology, Bengaluru, Dr. Thangadurai N, Dean- Innovation, Projects and Strategy, RajaRajeswari Group of Institutions, Bengaluru, Mr. Rajashekharareddy H G, Technical Expert at Gopalan Aerospace India Pvt Ltd, Bengaluru, Mr. C.AASISH, Drone Operations Head-	➢ Learned principles of drone aerodynamics, structural design considerations, and performance optimization for various flight conditions. ➢ Explored the integration of AI, IoT, GPS, sensors, computer vision, and communication technologies in modern drone systems. ➢ Acquired skills in drone modeling and simulation using industry-relevant tools such as MATLAB/Simulink, PX4, ArduPilot, and CAD software. ➢ Gained exposure to building and testing drone prototypes, including component selection, wiring, calibration, and tuning. ➢ Enhanced teaching competencies and curriculum development skills for effectively delivering drone-related content to students. ➢ Identified practical applications of drones in agriculture, surveillance, mapping, disaster management, logistics, and defense sectors.

					Orient Flights Aviation Academy, Mr. Ravindra Bucherla, Application Engineer in ARK Infosolutions Pvt. Ltd	
5	09/05/2024	RICAT 2024 Conference - Second National Conference on Recent Innovations and Challenges in Aviation Tech	Faculty Members	1 day	Dr.P.K.Sahoo, Senior Principal Scientist CSIR NAL, Bengaluru	➢ Gained insights into the latest innovations, ongoing research, and technological advancements in the field of aviation and aerospace engineering. ➢ Faculties improved their technical presentation skills through paper and poster presentations, effectively communicating complex ideas. ➢ Built connections with researchers, academicians, and industry professionals, encouraging future collaboration in academic and industrial projects. ➢ Enhanced skills in technical writing, peer-reviewed publication standards, and research methodology by participating in and observing quality paper submissions. ➢ Stimulated innovative thinking by engaging with emerging topics such as UAVs,

						electric aircraft, sustainable aviation fuel, additive manufacturing, and AI in aviation. ➢ Faculties gained insights to update and align course content with current industry trends and research directions in aviation. ➢ Encouraged students to pursue advanced research, higher education, and careers in aerospace, defense, and aviation sectors.
6	13/06/2024 to 15/06/2024	Workshop - Value Added Course on ANSYS	4th Year Students	2 days	Mr. Ravindra Bucherla, ARK info Solutions	➢ Acquired hands-on experience with ANSYS modules such as Structural Analysis, Thermal Analysis, Fluid Flow (CFD), and Modal Analysis. ➢ Gained the ability to apply engineering fundamentals (mechanics, thermodynamics, fluid dynamics) to real-world simulations. ➢ Learned how to model, mesh, simulate, and interpret results for components and systems under various loading conditions. ➢ Developed skills to analyze engineering problems and derive optimized design solutions using computational methods. ➢ Analyzed the response of different materials under stress, strain, and thermal

						loads, enhancing material selection knowledge. ➢ Gained confidence to take up mini and major projects involving simulation and analysis as part of academic or internship work.
7	25/07/2024	Exhibition - Project Exhibition-2024	2nd, 3rd & 4th Year Students & Faculty Members	1 day	Dr.Theerthamalai-ACSCE Prof.P.Soma - ACSCE	➢ Students applied theoretical knowledge to real-world problems, fostering innovation and creativity through hands-on project development. ➢ Gained experience in identifying problems, ideating solutions, prototyping, testing, and refining designs based on feedback. ➢ Improved technical competencies in areas such as electronics, mechanics, programming, CAD design, simulation, and fabrication. ➢ Developed interpersonal and collaborative skills by working in teams to complete and present their projects. ➢ Enhanced ability to effectively present project ideas and outcomes to a diverse audience including peers, faculty, and external evaluators.

						➢ Faculties actively guided students through design, development, and documentation processes, enhancing their mentorship and project supervision skills. ➢ Gained valuable feedback from evaluators and visitors, helping students improve their projects and presentation techniques. ➢ Projects often required integration of knowledge from multiple domains, promoting a multidisciplinary approach to engineering challenges.



Department of Aeronautical Engineering

List of Innovative Teaching Implemented for Faculty development, Student enrichment, and Curriculum support : Academic Year 2023-24

[Industrial Visits, Seminars & Guest Lectures]

Sl. No.	Date	Course Title	Target Audience	Duration	Speaker	Outcome / Skills Gained
1	07/09/2023	Technical Talk - Skill Development Program	First year Students	1 day	Prof.P.Soma Professor, AE, ACSCE	➢ Students developed confidence in expressing technical ideas clearly through verbal and written communication. ➢ Gained awareness of essential skills such as critical thinking, basic programming, engineering graphics, and problem-solving approaches. ➢ Understood the importance of early skill development and set academic and career goals aligned with individual interests and industry needs. ➢ Students became aware of the skills expected by industries, including the need for continuous learning and interdisciplinary knowledge.

						➢ Faculties gained insights into the learning mindset of first-year students, helping them tailor teaching methods and mentorship approaches. ➢ Encouraged a mindset of innovation and curiosity, emphasizing hands-on learning, tinkering, and project-based exploration from the first year.
2	05/10/2023	Awareness Program - Awareness and Support Program on Higher Education in abroad	4th year Students	1 day	Mr.Shambu Patter, Manager, Manya The Princeton Review	➢ Gained detailed awareness about higher education opportunities in countries like the USA, UK, Canada, Australia, Germany, and others. ➢ Learned about application timelines, university selection, SOP (Statement of Purpose) writing, LORs (Letters of Recommendation), and resume preparation. ➢ Gained knowledge about various scholarships, assistantships, and funding options available for international students. ➢ Identified long-term academic and career prospects, including Ph.D. pathways, research assistantships, and work opportunities post-study.

						➢ Inspired students to set clear goals, pursue academic excellence, and take advantage of global learning platforms.
3	07/10/2023	Seminar - Space Week-Session on Space and Entrepreneurship	2nd year Students	1 day	Dr.Vinoth G, CEO, Pongu Ventures	➢ Gained insights into the global and Indian space ecosystem, including key players like ISRO, NASA, SpaceX, and emerging private space startups. ➢ Encouraged innovation and ideation in areas such as small satellite development, CubeSats, communication systems, and space research tools. ➢ Understood the process of building a space-tech startup—idea validation, prototyping, funding sources (e.g., IN-SPACe, incubators), and scaling strategies. ➢ Faculties explored ways to integrate space entrepreneurship concepts into academic content, fostering innovation-led learning. ➢ Inspired students to explore careers and higher studies in space entrepreneurship, space engineering, and satellite applications.
						➢ Gained first-hand knowledge of current industry trends, workplace expectations,

4	02/12/2023	Technical Talk - Alumni Interaction	2nd 3rd & 4th year Students	1 day	Mr.Syed Tayeed Ahmed, System Engineer, BAIL, Bengaluru	and professional challenges faced in the engineering field. ➢ Received valuable advice on career planning, resume building, internship selection, higher education opportunities, and competitive exams like GATE, GRE, and UPSC. ➢ Understood the transition from academic learning to professional roles, and how to prepare for interviews, placements, and corporate culture. ➢ Identified key technical and soft skills needed in the industry, such as problem-solving, communication, teamwork, and adaptability. ➢ Inspired by alumni success stories, students were encouraged to set clear academic and professional goals with long-term vision. ➢ Reinforced alumni relationships and encouraged a culture of contribution and collaboration between past and present learners. ➢ Faculties gained feedback from alumni on curriculum relevance and areas where

						academic content can be aligned with industry practices.
5	19/03/2024	Seminar - Seminar on Role on F&DT in Aircraft Structural Design	2nd & 3rd Year Students	1 day	Dr.Kishore Brahma Former Scientist, NAL, DRDO, Bangalore	➢ Gained in-depth knowledge of fatigue behavior, crack initiation and propagation, and damage tolerance in aerospace structures. ➢ Understood the critical role of F&DT in ensuring structural integrity, airworthiness, and safety of aircraft over their service life. ➢ Learned how F&DT principles are applied in the design, testing, and certification of aircraft fuselage, wings, landing gear, and joints. ➢ Acquired insights into how different aerospace materials (aluminum alloys, composites, titanium) respond to fatigue loading. ➢ Gained exposure to experimental and computational tools (e.g., NDT methods, FEA, fracture mechanics models) used in fatigue and damage assessment. ➢ Faculties learned how to integrate F&DT topics effectively into aerospace engineering syllabi and lab sessions.

6	26/06/2024	Industrial Visit - Industrial Visit to U R Rao satellite center, ISRO, Bengaluru	2nd Year Students	1 day	U R Rao satellite center, ISRO, Old Airport Rd, PO, Vimanapura, Bengaluru 560017	➢ Gained direct exposure to the processes involved in the design, fabrication, integration, and testing of satellites. ➢ Observed high-end technologies such as cleanroom environments, thermal testing chambers, and vibration testing facilities used in satellite manufacturing. ➢ Developed a strong understanding of India's achievements in space science and technology through ISRO's missions and innovations. ➢ Explored various career paths in ISRO and other space research organizations, along with the qualifications and skills required. ➢ Realized the importance of collaborative efforts among engineers, scientists, and technicians in successful satellite development.
						➢ Gained a clear understanding of rapid prototyping principles, its significance in product development, and its advantages over traditional manufacturing. ➢ Learned about various additive manufacturing techniques such as FDM,

7	05/07/2024	Seminar - Rapid Prototyping in 3D Printing	2nd, 3rd & 4th Year Students	1 day	Mr.Moksha Aradhya, CEO, Getinkvision	SLA, SLS, and DMLS, along with their applications and limitations. ➢ Acquired knowledge on how to design parts optimized for 3D printing, including structural considerations, material selection, and print orientation. ➢ Understood the end-to-end workflow of 3D printing—from CAD modeling and STL conversion to slicing and machine setup using relevant software tools. ➢ Encouraged innovative thinking and problem-solving through rapid prototyping as a means to test, validate, and improve designs quickly.
						➢ Gained foundational knowledge about different types of intellectual property—patents, copyrights, trademarks, designs, and trade secrets. ➢ Understood how protecting intellectual property encourages innovation, entrepreneurship, and commercialization of new ideas.

8	12/07/2024	Seminar - Seminar on IPR and Startup	3rd & 4th Year Students	1 day	Mr.B.S.Lokesh, Startup mentor, Agastya Academy	➢ Learned the basic process of filing patents and the legal framework associated with intellectual property in India and globally. ➢ Understood how startups can use IPR to gain competitive advantage, secure funding, and enhance brand value. ➢ Inspired students and faculties to think innovatively and consider entrepreneurship as a viable career path. ➢ Faculties gained insights into mentoring students in IPR awareness, guiding them through innovation processes, and supporting institutional IP filings.

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Department of Aeronautical Engineering

Faculty Competencies and Certifications : Academic Year 2024-25

Sl. No	Faculty Name	Area of Specialization	No. of FDPs/Workshops Attended/Conducted Certifications (e.g., NPTEL,)	No of Journals (IJ/NJ/Google Scholar)	No of Books/Book Chapters	No of Funded Projects	No of Patents
1	Dr. P. Theerthamalai	Aerodynamics	-	2	1	1	-
2	Dr. G. Ramanan	Aircraft Materials	3	7	4	1	-
3	Dr. Anand A	Aircraft Materials	5	1	-	-	1
4	Dr. Radha Krishnan. P	Aerodynamics	3	1	-	-	
5	Mr. Dhanya Prakash R Babu	Structures	2	2	-	-	-
6	Mr. Albert Allen D Mello	Structures	2	-	-	-	-
7	Mr. Ganesh R	Aircraft systems	2	3	3	-	-

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Faculty Competencies and Certifications : Academic Year 2023-24

Sl. No	Faculty Name	Area of Specialization	No. of FDPs/Workshops Attended/Conducted Certifications (e.g., NPTEL,)	No of Journals (IJ/NJ/Google Scholar)	No of Books/Book Chapters	No of Funded Projects	No of Patents
1	Dr. P. Theerthamalai	Aerodynamics	-	1	-	1	-
2	Dr. G. Ramanan	Aircraft Materials	6	3	-	1	2
3	Dr. Anand A	Aircraft Materials	5	3	-	-	-
4	Dr. Inamul Hasan	Aerodynamics	7	4	-	-	1
5	Mr. Dhanya Prakash R Babu	Structures	6	1	-	-	-
5	Mr. Radha Krishnan. P	Aerodynamics	2	4	-	-	1
6	Mr. Albert Allen D Mello	Structures	1	-	-	-	1
7	Mr. Ganesh R	Aircraft systems	3	-	1	-	-

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Department of Aeronautical Engineering

Faculty Competencies and Certifications : Academic Year 2022-23

Sl. No	Faculty Name	Area of Specialization	No. of FDPs/Workshops Attended/Conducted Certifications (e.g., NPTEL,)	No of Journals (IJ/NJ/Google Scholar)	No of Books/Book Chapters	No of Funded Projects	No of Patents
1	Dr. P. Theerthamalai	Aerodynamics	-	1	-	2	-
2	Dr. G. Ramanan	Aircraft Materials	4	6	2	1	2
3	Dr. Anand A	Aircraft Materials	2	-	-	-	-
4	Dr. Inamul Hasan	Aerodynamics	3	6	-	-	-
5	Mr. Dhanya Prakash R Babu	Structures	2	2	-	-	-
5	Mr. Radha Krishnan. P	Aerodynamics	2	5	-	-	-
6	Mr. Albert Allen D Mello	Structures	1	-	-	-	1
7	Mr. Ganesh R	Aircraft systems	2	3	3	-	-

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Department of Aeronautical Engineering

List of Project Proposals Submitted to MSME under Faculty development, Student enrichment: 2024-25

Sl. No.	Title of the Proposal	Mentor	Student lead	Date of Submission	Amount Proposed (₹)	Domain
1	AI-Enabled Combat Rescue Drone System for Battlefield Support	Dr G Ramanan	Asiya Mansoor Dau	14-07-2025	₹02,00,000.00	Stealth, Surveillance, and Cyber Defense Technologies
2	BIO-INSPIRED AERODYNAMICS Mimicking Butterfly Scales to Reduce Aircraft Drag with CFD Analysis and Wind Tunnel Validation.	Dr Anand A	Varsha Basavaraj	14-07-2025	₹13,00,000.00	Stealth, Surveillance, and Cyber Defense Technologies
3	Development of BulletProof Using Non-Newtonian Fluid And Composite Material.	Dr Anand A	Brahmendra E	14-07-2025	₹05,74,750.00	Low-carbon footprint solutions/technologies
4	Heat Seeker system	Mr. Ganesh R	Krish Dev	14-07-2025	₹04,00,000.00	Stealth, Surveillance, and Cyber Defense Technologies

5	Areca Nut Boiled Waste Water Incorporated into Polyvinyl Alcohol for Packaging Applications: A Value Addition to Areca Nut Growers.	Dr Anand A	-	14-07-2025	₹15,71,786.50	Low-carbon footprint solutions/technologies
6	Solar Swarm Gaurd	Mr. Ganesh R	Pratham kumar R	14-07-2025	₹02,50,000.00	Stealth, Surveillance, and Cyber Defense Technologies
7	Survelliance drone system to monitor illegal mining and deforestation activites.	Mr. Albert Allen D Mello	Shivacharan holla N	14-07-2025	₹06,50,000.00	Stealth, Surveillance, and Cyber Defense Technologies
8	AGRIWEAVE	Dr.Ramanan G	Kavya V K	14-07-2025	₹08,50,000.00	Low-carbon footprint solutions/technologies