

AERONAUTICAL





DEPARTMENT MAGAZINE FOR



NAVIGATION INDEX

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WORDS OF WISDOM



Dr.A.C. Shanmugam

CHAIRMAN'S MESSAGE

The Aeronautical Engineering Department has consistently demonstrated growth, both in academics and research. Education here is not just about learning concepts but about building confidence and vision for the future. I am proud of the enthusiasm shown by our faculty and students, who have actively engaged in innovation and technical activities. This magazine reflects their creativity, hard work, and achievements. I hope it inspires every student to aim higher and to use knowledge responsibly for the progress of the nation and humanity.

PRINCIPAL'S MESSAGE

It gives me great pleasure to share a few thoughts through this magazine. At ACSCE, we are committed to nurturing young minds with knowledge, skills, and values that prepare them for the future. The Aeronautical Engineering Department has been a symbol of innovation and dedication, offering students opportunities to explore beyond classrooms through projects, research, and industry exposure. I encourage students to embrace curiosity, teamwork, and creativity as they strive for excellence. With the guidance of our experienced faculty and state-of-the-art facilities, I am confident that our students will soar high and contribute



Dr. Anandthirtha.B.Gudi (B.E., M.E., Ph.D.)



Dr. G. Ramanan, Head of the department

HOD'S MESSAGE

It is a privilege to present this magazine that showcases the talent, achievements, and spirit of our Aeronautical Engineering students. Our department, with its modern labs, experienced faculty, and active industry collaborations, provides the right platform for students to grow as future aerospace professionals. This magazine is a reflection of their dedication and innovative spirit. I encourage students to continue exploring new horizons, take up challenges, and uphold the values of discipline and its excellence. Together, let us keep flying towards greater heights.



It is a pleasure to present this edition of the Department of Aeronautical Engineering magazine. This publication reflects the creativity, talent, and achievements of students, highlighting technical insights, innovative projects, and imaginative expressions.

Through this magazine, we aim to capture the spirit of exploration and excellence that defines our department. It serves not only as a record of accomplishments but also as a source of inspiration for all students to pursue knowledge, innovation, and personal growth.

We hope this edition informs, motivates, and celebrates the passion and dedication of the student community.

- Editorial Team



ABOUT THE AERONAUTICAL DEPARTMENT

The Department of Aeronautical Engineering at ACS College of Engineering, established in 2010, is dedicated to shaping future aerospace professionals. The program blends theoretical knowledge with practical learning, offering students exposure to aerodynamics, aircraft structures, propulsion, UAVs, avionics, and flight systems.

With well-equipped laboratories, simulators, and project-based learning, students gain hands-on experience that complements their classroom studies. The department emphasizes innovation, teamwork, and problem-solving, preparing students to meet the challenges of the aerospace industry confidently.

Our graduates have successfully taken up opportunities in leading organizations such as HAL, ISRO, DRDO, Boeing, and Airbus, showcasing the department's commitment to quality education and professional excellence.

Being part of the Aeronautical Engineering Department is not just about academics it's about exploring ideas, building skills, and reaching new heights in aviation and aerospace.



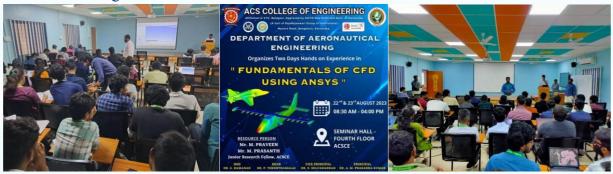


DEPARTMENT HIGHLIGHTS AY-2023-24

1. WORKSHOPS AND TRAINING PROGRAM

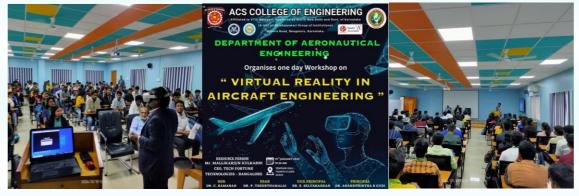
TWO-DAYS-HANDS-ON-TRAINING-ON-FUNDAMENTALS-OF-CFD-USING-ANSYS

The sessions covered software installation, structural analysis, meshing techniques (structured, unstructured, and 3D), flow analysis, and CFD simulations using Fluent. Students gained practical insights into aerodynamic analysis, lift, drag, stability, and propulsion performance, enhancing their understanding of fluid and structural mechanics.



WORKSHOP ON VIRTUAL REALITY IN AIRCRAFT ENGINEERING

The session highlighted how VR offers an affordable, realistic alternative to traditional flight simulators, enabling students to train with complex structures like jet engines and turboprops without needing physical prototypes.



AWARENESS AND SUPPORT PROGRAM ON HIGHER EDUCATION IN ABROAD

The session focused on the key aspects of international higher education, vital parameters for applying, and identifying suitable countries, fields, and universities for students.



2. SEMINARS AND TECHNICAL TALKS

SPACE WEEK - SESSION ON SPACE AND ENTREPRENEURSHIP

The session highlighted opportunities for entrepreneurs in the commercial space sector and discussed human and robotic space missions, leaving students with valuable insights into the future of space industries.



ALUMNI TALKS

The interactive session covered the alumni's career journey, lessons learned, latest industry trends and innovations, and emphasized lifelong learning. Networking opportunities were also highlighted as a benefit of alumni talks, potentially leading to professional connections and job opportunities.



SEMINAR ON ROLE ON F&DT IN AIRCRAFT STRUCTURAL DESIGN

In this seminar, Valuable insights were shared on the use of Forming & Design Tools in modern aircraft structures, covering practical applications and the latest trends in structural design.



3. FESTS AND CONFERENCES

KALAM DAY - 92ND BIRTH ANNIVERSARY OF DR.APJ KALAM

Three day event, included workshops, intercollege competition, Honouring Dr. APJ Abdul Kalam's Vision with inspiring talks and events.



2ND NATIONAL CONFERENCE ON RECENT INNOVATIONS AND CHALLENGES IN AVIATION TECHNOLOGY (RICAT-2024)

A platform to explore emerging aviation technologies led by Dr. PK Sahoo



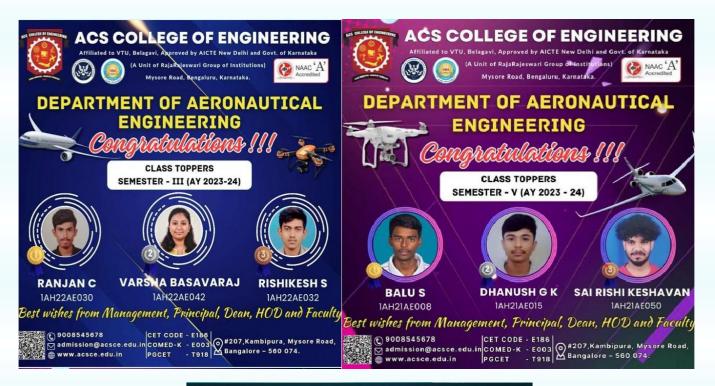
PROJECT EXHIBITION-2024

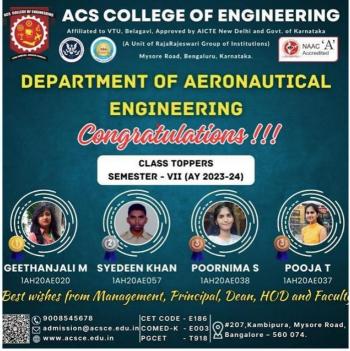
Showcasing innovative student projects and prototypes.



STUDENT ACHIEVEMENTS

CLASS TOPPERS OF ODD SEMESTER





- CLASS TOPPERS OF III SEMESTER: RANJAN C, VARSHA BASAVARAJ, RISHIKESH
- CLASS TOPPERS OF V SEMESTER: BALU S, DHANUSH G K, SAI RISHI KESHAVAN
- CLASS TOPPERS OF VII SEMESTER: GEETHANJALI M, SYEDEEN KHAN, POORNIMA S, POOJA T

CLASS TOPPERS OF EVEN SEMESTER



- CLASS TOPPERS OF IV SEM: RANJAN C, KRUTHIKA M, HABEEBULLA S
- CLASS TOPPERS OF VI SEM: MANGROLIYA KEVIN, BALU S, HARSH SINGH

UNIVERSITY TOPPERS



"Success is not just about reaching the top, it's about inspiring others to climb with you."

INTER-DEPARTMENT COMPETITION ACHIEVEMENT





COSMONIX 2024

The Aerospace Department of ACS College of Engineering conducted Cosmonix 2024, featuring technical competitions that tested knowledge and analytical skills.

Shivacharan and Varsha
Basavaraj secured 2nd place in
both the Air Crash Investigation
event and the Technical Quiz. This
achievement reflects dedication,

SPORTS ACHIEVEMENT

At the 25th VTU Inter-Collegiate State Level Athletic Meet 2023-24, organized by VTU Regional Centre, Mysuru, Khushal represented ACS College of Engineering in the 200 meters run. The event, held from 26th to 29th June 2024, witnessed participation from athletes across the state, showcasing talent, discipline, and competitive spirit.



NCC STUDENT ACHIEVEMENT







NCC Cadets L/CPL Brahmendra E., L/CPL S. Kushal Gowda, and CDT Chandana M. of our department have participated in the Pre-Event Basic Shooting Training held at Jyothy Kendriya Vidyalaya Campus on 14th January 2024. The training session provided cadets with hands-on experience in handling the .22 Air Rifle and mastering various shooting positions such as standing, kneeling, and laying. The event aimed to enhance the cadets' focus, discipline, and marksmanship skills as part of their NCC training program.







NCC Cadets CDT Brahmendra E., CDT S. Kushal Gowda, and CDT Chandana M. of our department, along with other cadets from various departments of our college, have participated in the Combined Annual Training Camp (CATC) held at New Horizon School, Hoskote Campus from 22nd July 2024 to 31st July 2024. During the camp, cadets underwent drill parade practice, attended theory sessions on topics such as Health and Hygiene, Field Craft and Battle Craft, and Weapons Training, and gained hands-on experience with various weapons. The camp also provided opportunities for cadets to showcase their talents by taking part in sports and cultural events, promoting teamwork, discipline, and leadership among participants.

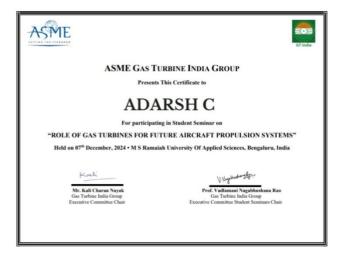




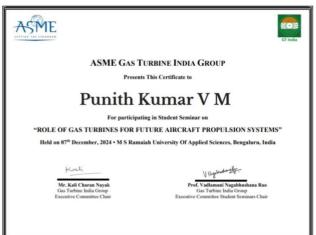


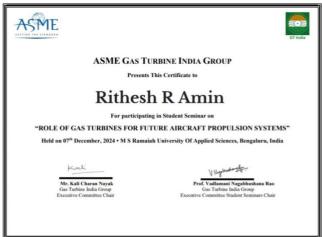
our department, along with other cadets from various departments of our college, have participated in the NCC 'B' Certificate Examination. During the examination, cadets underwent drill tests and practical assessments on subjects such as map reading and weapon training. A theory examination was also conducted, covering both common subjects and specialized NCC topics. The event aimed to evaluate the cadets' overall knowledge, discipline, and proficiency gained through their NCC training.

LEARNING BEYOUND CLASSROOM









The 3rd-year students of the Aeronautical Engineering Department successfully attended a seminar on Gas Turbine Engines conducted by ASME. The session provided valuable insights into the specifications and working principles of turbine engines. It also emphasized the importance of bridging the gap between theoretical knowledge and practical applications, showcasing the efforts of various scientists in advancing turbine technology for aerospace and aeronautical applications.

COMMUNITY & IMPACT FOCUSED

Aviact: Wings of Knowledge and Innovation"

Formed by four passionate 3rd-year Aeronautical students:

Varsha Basavaraj, Bilvashree, Sanjana R. Chouhan, and Nesara S. Shetty under CLt India, the Aviact community conducted an Aircraft Workshop to spread aeronautical awareness and inspire future innovators.











STUDENTS NPTEL ACHIEVEMENT

Sl. No	Name	Subject	Duration	Remarks
1	Sai Rishi	Introduction to Airplane Performance	Jul-Sep 2023	Elite –Gold
2	Sindhu S	Introduction to Airplane Performance	Jul-Sep 2023	Elite
3	Poornima S	Introduction to Airplane Performance	Jul-Sep 2023	Elite
4	Harshitha MN	Product Design & Manufacturing	Jan-Apr 2024	Elite
5	Nanda Kumar	Introduction to Airplane Performance	Jul-Sep 2023	Pass
6	Pooja T E	Introduction to Airplane Performance	Jul-Sep 2023	Pass
7	Balu S	Rocket Propulsion	Jan-Apr 2024	Pass
8	Mangroliya Kevin	Product Design & Manufacturing	Jan-Apr 2024	Elite
9	Harshitha M N	Introduction to Air breathing Propulsion	Jan-Jun 2024	Elite Gold
10	Varsha Basavaraj	Introduction to Composites	Jul-Oct 2024	Elite

STUDENT ARTICLES

1.JAPAN AIRLINES FLIGHT 123: LESSONS FROM THE SKIES

On August 12, 1985, Japan Airlines Flight 123 took off from Tokyo's Haneda Airport, bound for Osaka. It was a routine domestic journey on a Boeing 747-SR46, a jumbo jet specially designed to handle Japan's short but high-demand routes. On-board were 524 passengers and crew, many traveling home after a holiday. Within an hour, however, the flight would end in tragedy becoming the deadliest single-aircraft accident in aviation history, with 520 lives lost.

The Aircraft and Crew

The 747-SR46 was built for strength and capacity, carrying more than 500 passengers. Flight 123 was captained by Masami Takahama, an experienced pilot with over 12,000 flight hours, supported by First Officer Yutaka Sasaki and Flight Engineer Hiroshi Fukuda. Together, they faced one of aviation's greatest emergencies.

The Incident

Barely 12 minutes into the flight, the aircraft suffered a catastrophic decompression at 7,300 meters. A failed rear pressure bulkhead destroyed the vertical stabilizer and disabled the hydraulic systems, leaving the crew with almost no control. For over 30 minutes, the pilots battled to steady the aircraft, even using engine thrust to attempt steering. But at 18:56, the plane struck Mount Takamagahara, breaking apart on impact. Only four survivors were found.

Investigation and Findings

The investigation revealed that in 1978, the same aircraft had suffered a tail strike. The repairs, however, had been done incorrectly, leaving the bulkhead structurally weak. Over time, fatigue cracks spread leading to the catastrophic failure in 1985. This discovery exposed serious flaws in maintenance practices and repair standards.

Legacy and Impact

Flight 123 reshaped aviation. It led to stricter maintenance oversight, improved regulatory checks, and stronger crew training for emergencies. Today, it remains a case study for engineers, aviators, and investigators worldwide a reminder that aviation safety is built on accountability and precision.

A Tragedy Remembered

Every year, Japan honors the memory of those lost with memorial services. Beyond statistics, Flight 123 tells a deeply human story of families, of courage in the cockpit, and of the ongoing duty to learn from past mistakes.

Safety in aviation is never by chance; it is built on lessons, vigilance, and responsibility.

-VARSHA BASAVARAJ [1AH22AE042]

2. GREEN AVIATION: CAN WE MAKE FLYING ECO-FRIENDLY?

Air travel has become one of the most powerful symbols of human progress, connecting families across continents, fueling global trade, and turning distant lands into accessible destinations, yet behind this marvel lies a growing environmental cost that can no longer be ignored. Conventional aviation, powered almost entirely by fossil fuels, contributes significantly to greenhouse gas emissions, releasing not just carbon dioxide but also nitrogen oxides and contrails that intensify the warming effect at high altitudes. The very thing that makes flight extraordinary the ability to cover vast distances in a short time is also what makes it energy-hungry and difficult to decarbonize. This is where the vision of green aviation emerges, promising a future where humanity can continue to enjoy the magic of flight without sacrificing the health of the planet.

Engineers and scientists are pushing the boundaries of technology with solutions ranging from sustainable aviation fuels made from waste oils, algae, and agricultural by-products, to fully electric and hybrid-electric aircraft designed for regional travel. Imagine boarding a short-haul flight powered entirely by batteries, as effortless and guilt-free as hopping on an electric bus, or traveling across continents in a hydrogen-powered plane that leaves behind nothing but water vapor in the sky. Alongside radical innovations in propulsion, subtle but powerful improvements in aerodynamics and materials such as winglets that cut drag, lighter carbon-fiber structures, and even morphing wings inspired by birds are steadily reducing fuel burn and emissions. Green aviation is not only about the planes themselves; it extends to smarter air traffic systems guided by satellites and artificial intelligence, ensuring flights take the most efficient routes and spend less time circling airports while wasting fuel. Already, airlines are experimenting with biofuels, airports are rethinking infrastructure to accommodate hydrogen, and companies are racing to make electric flight a commercial reality.

The challenges, however, remain immense: sustainable fuels are expensive, batteries lack the energy density of kerosene, and building global-scale infrastructure for hydrogen requires unprecedented investment and cooperation. Yet history reminds us that aviation itself began with impossible dreams the Wright brothers' fragile machine once seemed like a fantasy, and today it is hard to imagine life without airplanes. In the same way, the pursuit of green aviation is more than a technical project; it is a human story about responsibility, innovation, and hope. It is about ensuring that future generations inherit a world where they can still explore the skies, reunite with loved ones across oceans, and experience the wonder of flight only this time, without leaving a scar on the planet that sustains us all.

-ANABIYA IRHAZ (4TH SEM)

STORY

THE SKY WAS NEVER SILENT

The sun had just begun to rise over the small airfield. Aarav, a young student pilot, stood beside a modest training aircraft its wings glistening with morning dew. To most, it was just a machine, but to him, it was a promise.

"Today, you fly alone," his instructor said with a calm smile. The words hit harder than the roar of any jet engine. His heart raced. Flying had always been his dream, but dreams have weight when they finally rest on your shoulders.

As Aarav climbed into the cockpit, the smell of aviation fuel mixed with fresh morning air. The aircraft hummed to life, its propeller spinning like a heartbeat. He taxied down the runway, every second reminding him of the countless engineers, scientists, and dreamers who had shaped aviation history from the Wright brothers sketching on paper, to modern aerospace labs pushing boundaries.

The wheels lifted, and for the first time, he was truly alone in the sky. The houses below shrank into tiny dots, rivers curved like silver threads, and the horizon seemed endless. In that silence, broken only by the steady drone of the engine, Aarav felt the same thrill that every aviator before him must have felt the discovery that the sky was not a limit but an invitation.

When he landed, his instructor clapped him on the back. "Remember," he said, "aircraft are built by hands, but flight is built by courage."

That night, Aarav wrote in his diary: "The sky was never silent it always waited for someone to listen. Today, I finally did."

-KAVYA VK (4TH SEM)

POEMS

1. WINGS OF TOMORROW

In skies of blue, new dreams take flight,
Aeronautical minds chase the light.
Morphing wings that shift and bend,
Blended bodies, drag to end.

Engines whisper, clean and strong, Hybrid, hydrogen, move us along. Open rotors hum with grace, Quieter skies, a greener space.

Smart controls with AI's hand, Guide the aircraft safe to land. Sensors watch with tireless eyes, Health of systems, no surprise.

Solar wings and taxiing green
Recyclable frames, a future seen.
Supersonic jets with softened sound,
E VTOL taxis lift off the ground.

Swarming drones and pilots smart,
Innovation plays its part.
From safety, speed, to skies so free,
Engineering shapes our destiny.
-PAVITHRA (4TH SEM)

2. DR. KALAM, MY ETERNAL INSPIRATION

Dr. Kalam, you are my light, A star that shines through every night. Your dreams for India still take flight, They live in me, they burn so bright.

You dreamed of 2020's dawn, A nation strong, with shadows gone. You told us youth to lead the way, To build tomorrow from today.

Even the way you left was true, A teacher's heart, till the last breath too. While speaking to students, your soul took wing, A final lesson, everlasting.

Now every time I raise my eyes, And see the stars across the skies, I feel your presence watching near, Your voice still whispers in my ear.

You are my guide, my inspiration, The spirit of hope for our generation. Though you are gone, you're never far Forever my teacher, forever my star.

-VARSHA BASAVARAJ

[1AH22AE042]

DID YOU KNOW?

- The Wright brothers' first flight in 1903 lasted just 12 seconds and covered only 120 feet less than the wingspan of a Boeing 747.
- Jet engines suck in more than a ton of air per second during takeoff.
- The SR-71 Blackbird jet got faster as it heated up, cruising at Mach 3+ and even leaking fuel on the ground because its panels only sealed tight at high speeds.
- The **altitude record** for a manned balloon flight is over **128,000 feet** above 99% of Earth's atmosphere!
- Some aircraft wings have tiny devices called **vortex generators** to control airflow and delay stall.
- Birds inspired many aircraft designs, from wing shapes to flapping drones this is called bio mimicry.
- A Boeing 737 is hit by lightning at least once a year, but is built to safely handle it.
- The space shuttle's re-entry temperature exceeded 1,650°C, which is hotter than lava.
- Aircraft are painted white because it reflects sunlight and helps detect cracks or leaks more easily.
- Modern aircraft are 40–50% made of composites, like carbon fibre, to reduce weight and increase efficiency.

FUN CORNER

CROSS WORDS

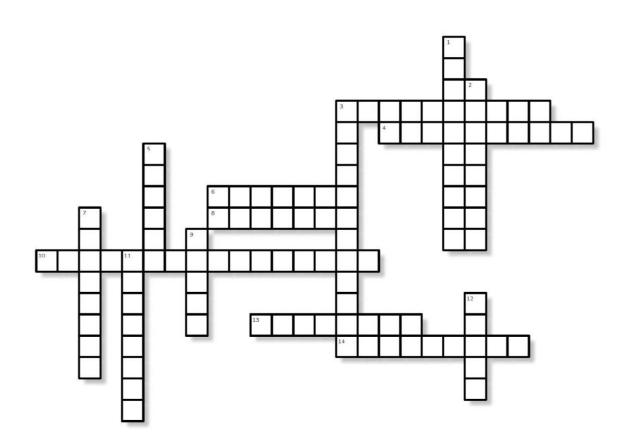
Think you know aviation inside out? Prove it by cracking this crossword!

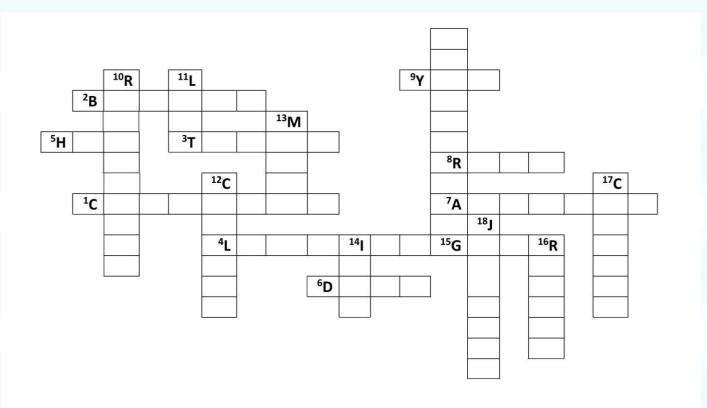
Across

- Layers of gas surrounding a planet or other celestial body
- 4. Speeds greater than five times the speed of sound
- 6. Equipment or cargo carried by a spacecraft
- 8. Returning from space back into Earth's atmosphere
- 10. Existing outside of Earth's atmosphere
- 13. Device used to propel a spacecraft into orbit
- 14. Object that orbits a larger body in space

Down

- 1. Fuel used to power a spacecraft
- 2. Propulsion system on a spacecraft
- 3. Study of the movement of air and objects through it
- 5. Vehicle used to travel through space
- 7. Height above sea level or ground surface
- Path followed by a satellite or spacecraft around a celestial body
- 11. Operation of aircraft
- Controlled descent of a spacecraft without engine power





10	ACROSS	DOWN
1.	The supersonic passenger jet	10. Famous British company for engines
2.	American jet aircraft manufacturer	11. The upward force that lets aircraft defy gravity, but not an elevator
3.	India's indigenous light combat aircraft	12. Avionics giant whose name is shared with a famous Apollo astronaut
4.	The supports used for takeoff	13. Speed measure named after an Austrian physicist, often followed by a number.
5.	Indian government aerospace company	14. Indian space agency that sent a probe to Mars on its first try
6.	Aerodynamic force that opposes forward motion of an aircraft	15. Company known for jet engines, born from Thomas Edison's legacy
7.	Wing control surface used to roll the aircraft	16. Tail fin control surface that keeps you from going sideways
8.	The twisting force that makes an aircraft spin around its front-to-back axis	17. Pilots' office in the sky
9.	Side-to-side movement of an aircraft's nose	18. Power source that "breathes air and fire" to propel aircraft.

FIND THE WORDS

Circle the skies on paper find them all before they fly away!

Aileron Altitude Cockpit Drag Flaps Fuselage Glider Lift Propeller Tailplane Thrust Yaw

R Τ R S G P W Ε B Α D H N S F Α U S Ε L Α Ε Ρ J T В Т G S Υ Ε F G Τ 1 0 Α Α L L R Α N Ε T 0 U L R L Ρ Ε Α Н N P D Ε L R Ε Ν G 0 1 Α D S R Ε D L F Ρ T Y R Ε Ε T P 0 0 Τ L 1 D S U Α G C R Ε R N L 1 1 0 L D S T Α C R Ε Ρ M F J R Ν U G C K Н Ρ U N Α 0 Ρ L P T T F H Α U P Ε 0 L L В Ε C 1 Т I Ε R G J L U I Ν Y 0 O W Н Α Т C M G C F T D U 0 Ε В Α L L C S Ε Α R K Ε P N L D J R Α Α F 0 L Ε R 1 N P R Т E M G Ρ B Ε S N S Α L U Y T U R H Τ В R

MYTH BUSTERS

- Myth: "Planes dump toilet waste mid-air."
 - Fact: All waste is stored in sealed tanks and removed after landing.
- Myth: "If an engine fails, the plane will crash."
 - **Fact:** Most commercial aircraft can glide for **dozens of miles** and land safely on **one engine**.
- Myth: "Helicopters can't glide during engine failure."
 - **Fact:** Helicopters use **autorotation** to descend and land without engine power.
- Myth: "Opening the aircraft door mid-flight will suck everyone out."

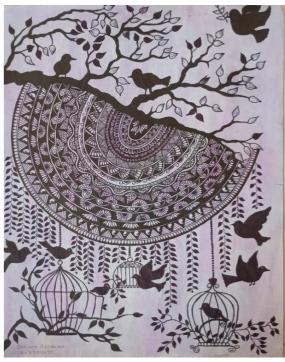
 Fact: It's physically impossible due to cabin pressure keeping the door sealed.
- Myth: "Airplane wings flap during flight."
 - Fact: Wings flex to absorb turbulence, but do not flap like bird wings.
- Myth: "Jet fuel explodes easily."
 - **Fact:** Jet fuel is **highly stable** and doesn't ignite easily it needs precise conditions.
- Myth: "Black boxes are black."
 - Fact: They are bright orange to make them easy to locate after a crash.
- Myth: "Planes fly in a straight line on maps."
 - Fact: Aircraft follow Great Circle routes, which look curved on flat maps but are the shortest path on Earth's surface.
- Myth: "Pilots use autopilot all the time."
 - Fact: Autopilot is used mainly during cruise; take-offs and landings are mostly done manually.

STUDENT CREATIVE CORNER

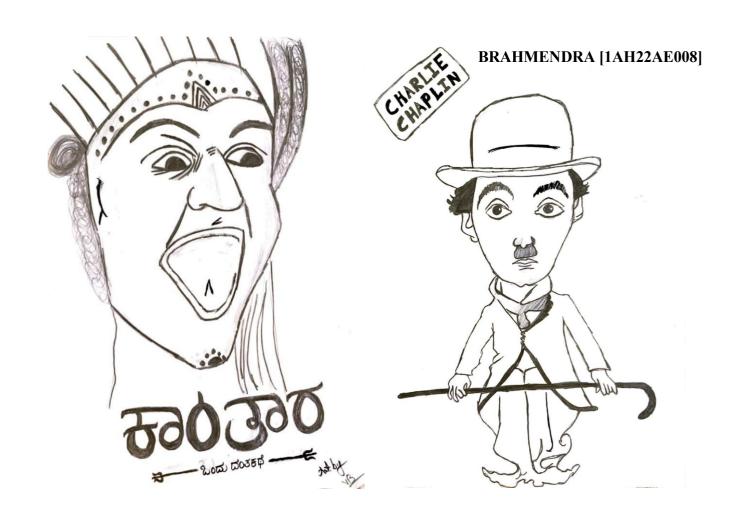








SANJANA R CHOUHAN [1AH22AE037]







CHANDANA [1AH22AE009]

"AERONAUTICS IS WHERE CURIOSITY BECOMES LIFT,
KNOWLEDGE BECOMES THRUST, AND IMAGINATION
BECOMES FLIGHT."

