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Add-on Lecture on "Aircraft Design and Airworthiness"

The Department of **Aeronautical and Aerospace Engineering** organised an Add-on Lecture on **"Aircraft Design and Airworthiness"** for the undergraduate students to enhance their technical knowledge and practical understanding of modern aircraft systems and certification procedures. The session was delivered by Shri Senthilkumar G, who shared his expertise and industrial experience in the field of aerospace engineering. The lecture covered important topics such as aircraft design concepts, aircraft structures, structural loads, stress analysis, material selection, and airworthiness standards followed in the aviation industry. The resource person also explained the significance of safety regulations, certification procedures, and maintenance practices required to ensure reliable aircraft operation. The programme provided students with valuable exposure to real-world aerospace applications and recent developments in aircraft design

Schedule of the Event

- **Date:** May 07, 2026
- **Time:** 10:00 AM – 13:00 PM
- **Venue** Rajalakshmi Seminar Hall, M V J College of Engineering
- **Organised by:** Department of Aeronautical and Aerospace Engineering
- **Speaker:** Shri Senthilkumar G,
  Scientist F, CEMILAC-DRDO

The lecture provided students with exposure to real-time aerospace engineering practices and highlighted the importance of structural integrity, safety, reliability, and regulatory compliance in aircraft development. The session was highly informative and enabled students to understand the practical aspects involved in aircraft design, structural analysis, and maintenance procedures.

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Introduction:

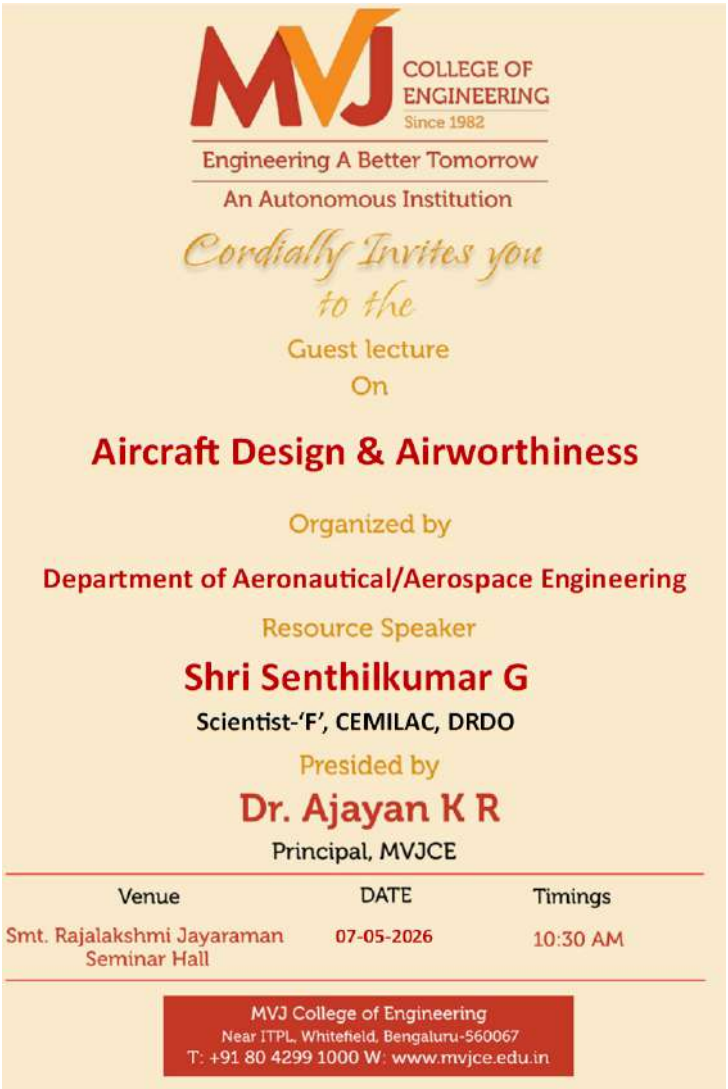

Figure 1: Invitation to Guest Speaker

The resource person began the session by explaining the fundamentals of aircraft design and the various stages involved in the aircraft development process. He discussed conceptual design, aerodynamic design, structural design, material selection, and system integration. The importance of balancing performance, safety,

Figure 2: The Guest Speaker was felicitated by Dr. R K Mishra, Professor, Department of Aeronautical Engineering

weight, and operational efficiency during aircraft design was clearly explained.

The speaker elaborated on aircraft structures and their significance in maintaining the strength and stability of an aircraft during flight operations. Different structural members, such as fuselage, wings, empennage, ribs, spars, bulkheads, and longerons, were discussed in detail. The lecture also covered the types of materials commonly used in aircraft structures, including aluminum alloys, titanium alloys, composite materials, and advanced lightweight materials used in modern aircraft manufacturing.

A major portion of the lecture focused on aircraft loads and structural analysis. The resource person explained the different types of loads acting on an aircraft, such as:

- Aerodynamic loads
- Maneuver loads
- Gust loads

- Landing loads
- Engine and thrust loads
- Thermal loads
- Fatigue and vibration loads.

He explained how these loads affect aircraft structural performance and emphasised the importance of stress analysis, fatigue analysis, and safety factors during aircraft design. The concepts of load paths, structural redundancy, and damage tolerance were also discussed with practical examples from aerospace applications.

Figure 3: Speaker delivering lecture on "Aircraft Structures and Loads"

The session further highlighted the concept of airworthiness and its role in ensuring aircraft safety and operational reliability. The speaker explained the certification procedures followed by aviation authorities and the importance of complying with airworthiness regulations during aircraft manufacturing and operation. Stu-

dents were introduced to maintenance schedules, inspection procedures, reliability assessment, and safety standards followed in the aerospace industry.

Figure 4: Participants for the session

The resource person also shared practical experiences and case studies related to aircraft structural failures, maintenance issues, and certification challenges encountered in the aerospace sector. These examples helped students understand the importance of proper design practices and continuous monitoring of aircraft systems.

Outcome of the event:

The add-on lecture on "Aircraft Design and Airworthiness" successfully achieved its objectives of enhancing students. By the end of the session, students were able to:

- Understand the fundamentals of aircraft design and airworthiness.
- Gain knowledge about aircraft structural components and materials.

- Identify different types of loads acting on aircraft structures.
- Gain awareness of industrial practices followed in aerospace and defense organisations.
- Understand stress analysis and safety considerations in aircraft design.

Conclusion:

The Add-on Lecture on "Aircraft Design and Airworthiness" was highly beneficial and informative for the undergraduate students of Aeronautical and Aerospace Engineering. The session provided valuable insights into aircraft structural design, loading analysis, safety standards, and certification procedures followed in the aerospace industry. The expert guidance and practical experience shared by Shri Senthilkumar G greatly enhanced the students' technical understanding and motivated them to explore advanced areas in aerospace engineering and aircraft safety. The programme concluded successfully with a vote of thanks expressing gratitude to the guest speaker for his valuable contribution and interaction with the students.

Report by: Prof. Gooty Rohan and Dr. Prabhu

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