

Department of Mechanical Engineering

October-December-2023

ECHELON INSTITUTE OF TECHNOLOGY



NEWS LETTER October-December 2023

DEPARTMENT OF MECHANICAL ENGINEERING



Echelon Institute of Technology, Faridabad

ECHELON INSTITUTE OF TECHNOLOGY, FARIDABAD

INSTITUTE VISION AND MISSION

Vision

The institute is committed to fulfilling its vision of- "Technical and Management leaders engaged in the evolution of life, being at the frontiers of the continuous technological and administrative breakthroughs, inspired by ongoing exploration of self, society, and nature through self-reflective consciousness by building a culture of inspiration, exploration and growth."

Mission

M-1 Having a culture of inspiration, exploration and invention through effective, experiential teaching-learning giving rise to ever evolving knowledge and wisdom.

M-2 To have self-inspired students ever engaged in continually working upon and sharpening and deepening computational, creative, innovative and leadership consciousness.

M-3 Having students established in self- reflective consciousness, committed to personal, social & human integrity and engaged in deep inquiry and conversation, giving rise to shared, inter-subjective human values and consciousness.

**ECHELON INSTITUTE OF TECHNOLOGY,
FARIDABAD**

**DEPARTMENT OF MECHANICAL ENGINEERING
VISION AND MISSION**

Vision

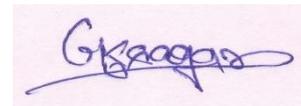
"To create quality mechanical engineering professionals having ethical and moral values, able to solve real life technological problems, possessing capability to adapt the rapid changes occurring in the technology to serve society as technocrats, innovators, academicians & entrepreneurs."

Mission

- i. To ensure sufficient technological exposure to the students in order to Create tech-savvy professionals.
- ii. To maintain high quality labs and workshops as per the requirement of current industry scenario.
- iii. To impart adequate CAD/CAM exposure to nurture designing skills of the students.
- iv. To ensure effective counseling and career guidance facilities to the students to help them achieve their goals.
- v. To motivate the students to participate in the national level examinations such as GATE/CAT/Engineering Services etc.
- vi. To have well qualified and competent faculty members in the department who are in a position to impart quality technical education.
- vii. To encourage faculty & staff members to participate in seminars and workshops for their awareness of state-of-the-art technology.
- viii. To encourage the faculty & staff members to pursue higher education and research.

FROM THE DESK OF EDITOR IN CHIEF

It gives me immense pleasure to present the latest trends in Mechanical Engineering. The period has been packed with variety of activities in the hectic and tight academic schedule. This edition of the newsletter summarizes the achievements and highlights of the semester. I would like to take this opportunity to present the readers with the glimpses of the week and other activities of the Mechanical Engineering Department. In this quest, I would like to keep you up –to-date with the happenings of the department. And hence, present you with this half yearly newsletter. You can know the details as you go through the newsletter. Every faculty made an effort to avoid the boredom of class room lectures and ample opportunities were provided for personality development of the students and enhancement of their skills as per their choice/ area of interest through hobby clubs and industrial visits. This approach helps maintaining a very healthy and conducive atmosphere of learning, keeping the students in an excited state eager to grasp knowledge at all times. The department is scaling new heights with such positive approach.

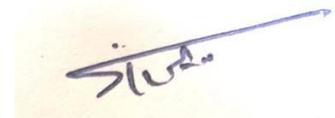


Mr. Gaurav Kumar
Assistant Professor
Department of Mechanical
Engineering
EIT Faridabad

ENDEAVOUR BY HOD

The Aim of our department is to provide quality education. The process of learning is extremely important in life. What you learn, how you learn and where you learn play a crucial role in developing ones intellectual capability, besides career. I am proud to see that the students and faculty of our department have put in appreciable effort into creating this newsletter. This newsletter highlights the academic and non-academic activities of both faculty and students of the Department of Mechanical Engineering.

I congratulate the editorial team for their brilliant and original efforts. I wish all the students and faculty a great academic career



Dr. Sindhu Kumar
HOD Mechanical Engineering
EIT, Faridabad

ABOUT THE DEPARTMENT

Mechanical Engineering is the application of physical and scientific principles, and its history is intricately linked to advances in understanding of physics and mathematics throughout history. Because Mechanical engineering is a wide ranging profession, including several separate specialized sub-disciplines, its history is linked to knowledge of structures, materials science, Production, Design, Thermal, Welding, Manufacturing, Various Machine operations, and Solid mechanic etc.

The course cover basic sciences, Mathematics, Engineering graphics, computing techniques along with the fundamental Engineering principles of construction materials, Engineering Graphics & Drawing and Laboratory classes interesting of materials help to understand Mechanical Engineering in a practical way. Software packages like AutoCAD, CNC, CATIA, Solid Works, Origin Pro, ANSYS and CAD/CAM allows our students to expand their skills and provide an adequate platform to perform analysis, design and drawing for a wide range of Mechanical Engineering machines and other heavy Design structures or tools etc.

Every semester students will be taken for Industrial Visits to various Automobile, Thermal, Power Plants, Design related companies, Dams and places of interest to impart Practical Knowledge. In addition, the students have to undergo practical Training for 2- 3 weeks in any Design, Manufacturing, Welding, Automobile and Production to gain practical experience and technical skills. The students are also encouraged to give seminars on current areas of research. To acquire high degree of engineering skills and to translate brilliant ideas into a working reality.

Farewell Celebration – Uparambh 2k23

The Institution recently bid a heartfelt farewell – Uparambh 2023 on 6th November 2023 to our valued fourth-year students, marking the end of their academic journey with warmth and camaraderie. Amidst the poignant farewells, the highlight of the event was the selection and celebration of Mr. and Ms. Farewell. The atmosphere buzzed with enthusiasm as nominees showcased their talents and charisma, captivating the audience. Through rounds of applause and cheers, the winners were crowned, symbolizing the embodiment of our institute's spirit and excellence. Their four journey was celebrated with fervour, adding an extra layer of joy to the farewell festivities, ensuring a memorable send-off for our graduating class.



Fresher's Celebration – Samarambh 2k23

On 10th November 2023 Echelon Institute of Technology marked a jubilant occasion as our institute embraced Freshers Day with open arms, welcoming new talents into our midst. Amidst the excitement, the crowning of Mr. and Ms. Freshers stole the spotlight, celebrated with infectious enthusiasm. Nominees dazzled the crowd with their charisma, making the selection a thrilling affair. Cheers resounded as the deserving winners claimed their titles, embodying the spirit of our community. Adding to the grandeur, we were honoured to host three esteemed chief guests and judges: Vaibhavi Kohli (Model and Actress), Ankit Sikarwar (Model and Actor), and Manisha

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Khandelwal ((Model and Actress). Their presence elevated the event, inspiring our fresh talents to embark on a journey of growth and excellence.

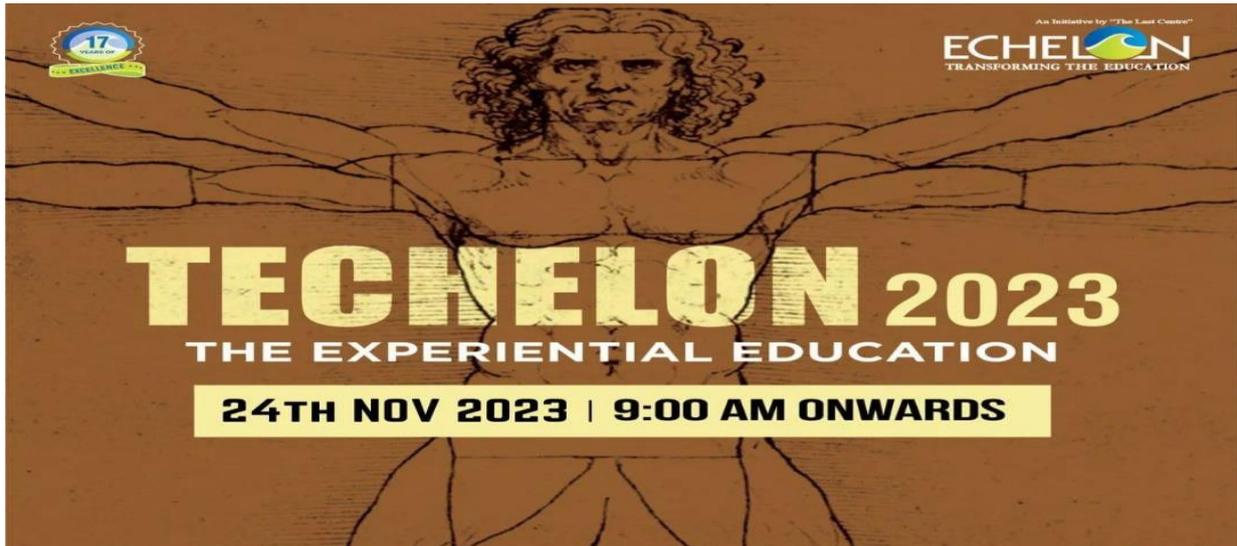


Techlon- 24th November, 2023

Techlon, is an event organized at Echelon Institute of Technology on 24th November 2023, sets the stage for students to showcase their technical prowess and innovation. This platform provides an avenue for students to demonstrate their talents through a diverse range of technical projects and students from all courses showcase their projects. From cutting-edge software applications to groundbreaking engineering solutions, Techlon celebrates the ingenuity and creativity of our student body. With a focus on fostering collaboration and pushing the boundaries of technology, Techlon embodies the spirit of exploration and discovery. Through this event, Echelon Institute of Technology reaffirms its commitment to nurturing the next generation of technical leaders and innovators.

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Student Recognition Day – Prashashti 2023

"Prashashti 2023" illuminated Echelon Institute of Technology on November 30th as the institution celebrated its annual Student Recognition Day with pomp and pride. This hallmark event honored the exceptional achievements and contributions of our students across various domains. From academic brilliance to outstanding leadership and community engagement, *Prashashti* showcased the multifaceted talents within our student body. Distinguished guests, faculty, and peers alike gathered to applaud and recognize the dedication and perseverance of these outstanding individuals. As the curtains drew on *Prashashti 2023*, it left an indelible mark, reaffirming our commitment to nurturing and celebrating excellence in every facet of student life.



Echelon Institute of Technology, Faridabad

एस्लॉन इंस्टीट्यूट ऑफ टेक्नोलॉजी ने प्रशस्ति-2023 मनाया

पार्यावरण समाचार सेवा। फरीदाबाद

एस्लॉन इंस्टीट्यूट ऑफ टेक्नोलॉजी ने प्रशस्ति-2023 मनाया। संस्थान ने प्रशस्ति-2023 की मेजबानी करके एक महत्वपूर्ण अवसर को चिह्नित किया। यह दिन अपने उत्कृष्ट छात्रों की उल्लेखनीय उपलब्धियों को पहचानने और जश्न मनाने के लिए समर्पित था।

कार्यक्रम की शुरुआत डॉ. सुनील वर्मा निदेशक प्रथम वर्ष और डॉ. मुकेश सेनी डीन छात्र कल्याण द्वारा दीप प्रज्वलन के साथ हुई। प्रतिष्ठित छात्रों को डायरेक्टर पुरस्कार से सम्मानित किया गया। पुरस्कार प्राप्तकर्ताओं में सुनिधि शर्मा, ओम कुमार, आयुष कुमार, यश शर्मा और मोहम्मद सलीम

छात्र उपलब्धियों के लिए एक विशेष मान्यता दिवस

अब्दुल्ला शामिल थे। पुरस्कार डॉ. सुनील वर्मा द्वारा प्रदान किये गये। इस अवसर पर प्रदान किए गए अन्य पुरस्कारों में अकादमिक उत्कृष्टता पुरस्कार में 22 छात्र, उत्तम उपस्थिति पुरस्कार में 12 छात्र, उत्साही शिक्षार्थी पाठ्यक्रम के सर्वश्रेष्ठ प्रदर्शन में छह छात्र, खेल में अनुकरणीय प्रदर्शन में 17 छात्र, एस्प्रिट डी कॉर्प 5पी-फाइनल वर्ष के छात्र, सैंपर एफआई अवार्ड 6 प्री-फाइनल वर्ष के छात्र, टेकेलॉन में 74 छात्र, क्लब ऑफ द ईयर अवार्ड समत्व क्लब, संकल्प अवार्ड



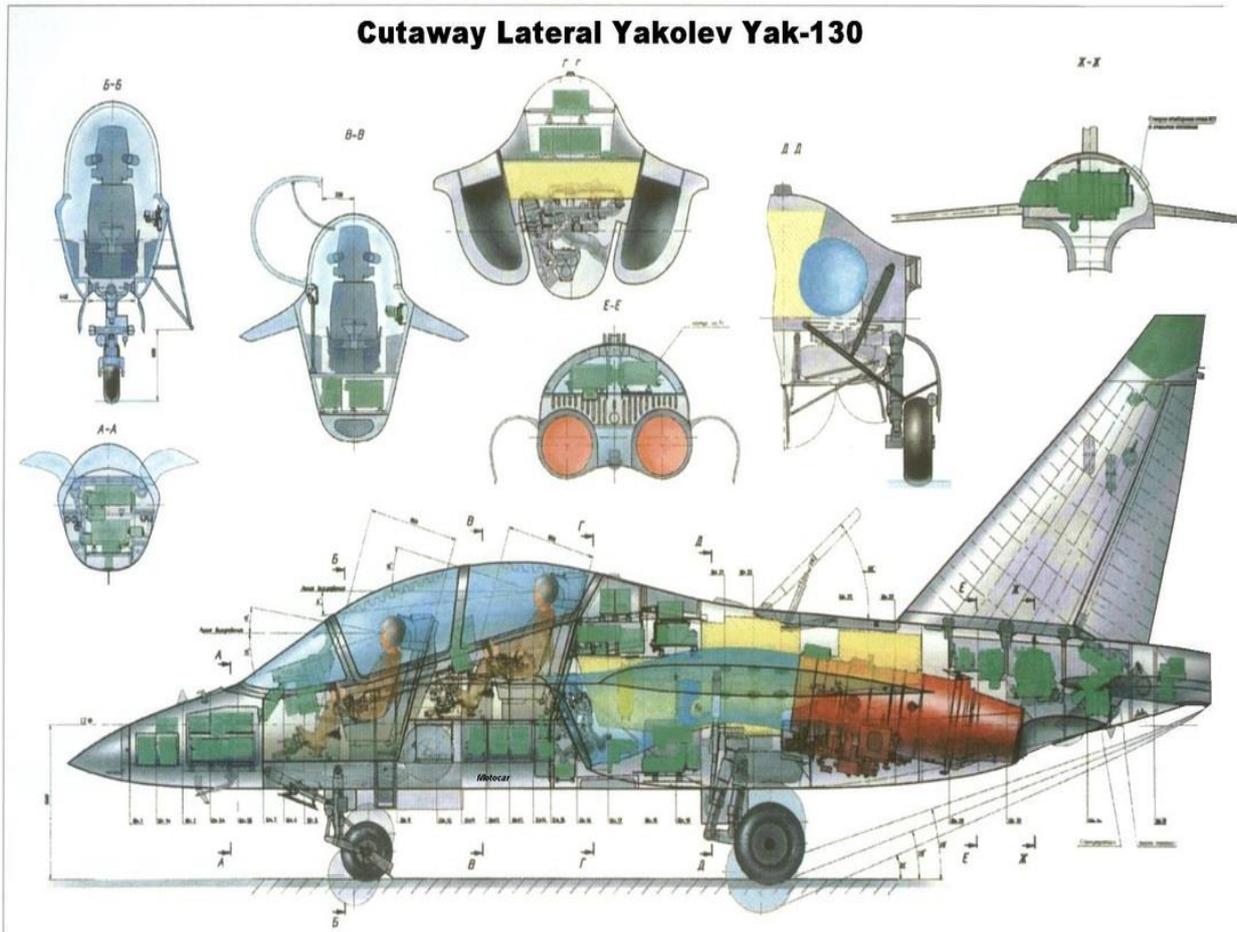
में 13 छात्र और न्यूजी ऑफ द वर्ष पुरस्कार में चार छात्र शामिल हुए। इसके अलावा 124 छात्रों को एनएसआईसी में भाग लेने के लिए, 39 छात्रों को इंटरशिप कार्यक्रम के लिए, 12 छात्रों को वर्ल्ड क्लाइमेट क्लॉक असेंबली इवेंट के लिए और

नौ छात्रों को एंटी-रेगिंग इवेंट के लिए सम्मानित किया गया। इस अवसर पर डॉ. इरफानुल्लाह खान, डॉ. जुगनेश कुमार, नीतू चौहान, डॉ. शीतल प्रसाद, डॉ. सिंधु कुमार, डॉ. मोनिका गर्ग, मोहम्मद दानिश,

रचिका अग्रवाल, डॉ. पुनम रानी, मुणाल मंजरी, स्तुति जोहरी, वंदना अग्रवाल और अन्य शिक्षक उपस्थित थे।

यह कार्यक्रम डॉ. सुनील वर्मा निदेशक प्रथम वर्ष के भाषण के साथ एक प्रेरणादायक नोट पर संपन्न हुआ, जिसमें अपने छात्रों के बीच उत्कृष्टता और समय विकास को बढ़ावा देने के लिए संस्थान की प्रतिबद्धता पर जोर दिया गया। धन्यवाद प्रस्ताव, डीन छात्र कल्याण डॉ. मुकेश सेनी ने प्रस्तुत किया। एस्लॉन इंस्टीट्यूट ऑफ टेक्नोलॉजी के सभी शिक्षकों ने पुरस्कार विजेताओं को उनकी उपलब्धियों और उत्कृष्टता की भावना के प्रति प्रतिबद्धता का जश्न मनाते हुए हार्दिक बधाई दी।

Upcoming Government Project



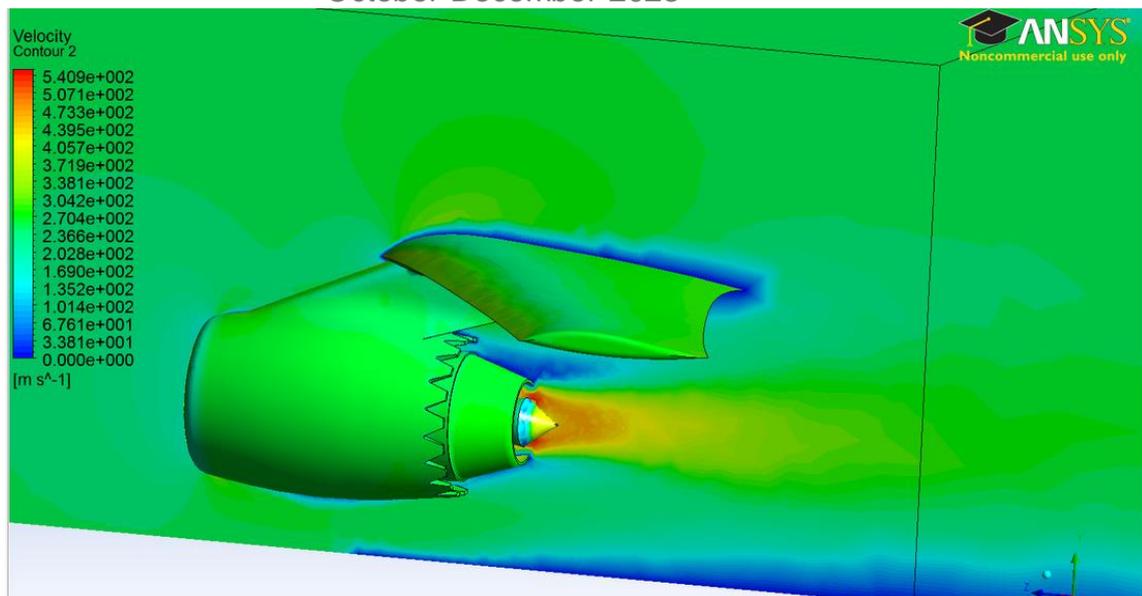
CFD Analysis of Ejection Seat System of an Aircraft

The Design Process

Aircraft design goes through numerous development stages. Usually it starts with specified requirements set by the ministry of transport for a civil aircraft or the ministry of defense would set the requirement for a jet fighter. Drawings are made and several design concepts are chosen. The designs are sent to the workshops and wind tunnel scale models are constructed. The picture below shows a constructed model click on the image to get more info about the source of the image. What is used at some instances to check the streamline flow pattern around an aircraft is through putting it in a water tank and applying dye to the flow and seeing how aerodynamically efficient it is. By following the dye stream lines flowing around the aircraft body any regions of flow stagnation can be detected at different flow regimes.

Wind tunnel tests are done for the following

- 1-To calculate the drag coefficients at different flow velocities and also to measure the drag force generated during flight.
- 2- Seeing the shock waves occurring to sonic and supersonic flow regimes. By seeing the shock waves and how they interact with various parts of the aircraft, the importance of this comes from seeing how control surfaces get affected by these flow patterns. Losing control of an aircraft comes from control surface not performing their role.
- 3- Flutter tests, that is through exposing the model aircraft to its extreme flight conditions it is designed for.
- 4- Seeing the generated lift the plane makes at different pitch angles, again the selected wing profile depends on the design specifications and requirements. Meaning the wing profile used for a jet fighter will be different than the one used for a civil airliner.



Mathematical Modelling Side

- 1-You need to gather some initial parameters for your case. The first is the flow speed the aircraft will encounter at the maximum flight regime it can encounter.
- 2-Then you will need to get all the geometrical dimensions relating to the wing aerofoils you will be studying.
- 3-Modelling the geometry using a CAD software comes next.
- 4-Then unsteady simulations are required to be run on the aerofoils at the critical flow velocities the wing would encounter.
- 5-Specifying the regions of high force affecting the surface comes next and plotting the force distribution in the wing span direction and the camber direction is required.

Conclusion

In conclusion, mechanical engineers play a critical role in the development and growth of modern society. They are involved in the design and development of machines, tools, and systems that are essential for many industries.

I believe that Mechanical Engineering is too vital of a field to be dropped from the curriculum due to its importance to the University and to the world. Mechanical Engineering has intertwined throughout the making of our history, and is the backbone of almost everything that we use on a daily basis. Since the days of Archimedes, it has played such a large role in the development of our world, and it's the foundation of so many amazing products and feats in our lives. This computer I am trying on would not be in existence if not for a Mechanical Engineer.

The department here at UK knows this and teaches its pupils how to be great in today's world. Mechanical Engineering courses teach valuable information and applications that can be easily put forth in the real world. Think of a tree, a giant tree with many branches. Think of this tree as the Mechanical Engineering major, and the branches as the other engineering majors. Without this tree, the branches could not survive, the tree is Mechanical Engineering and the branches are the other majors. Without Mechanical Engineering, the other fields would cease to exist, because so much of what they stand for was built

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through Mechanical Engineering.

I believe that there are not enough Mechanical Engineers in the world to face real problems today, and I believe the major should be expanded to accommodate the larger problems in the world today, instead of completely dropping it to fund a different major.

