Department of Mechanical Engineering

July-September-2023

ECHELON INSTITUTE OF TECHNOLOGY

NEWS LETTER July-September 2023

DEPARTMENT OF MECHANICAL ENGINEERING

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

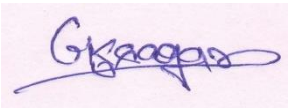
"To create quality mechanical engineering professionals having ethical and moral values, able to solve real life technological problems, possessing capability to adapt the rapid changes occurring in the technology to serve society as technocrats, innovators, academicians & entrepreneurs."

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 EDITIOR 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
Deptt. of Mechanical Engineering
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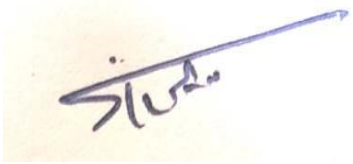
ENDEAVOUR BY HOD

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.

Achievements in Department

Mr. Sindhu Kumar has completed his Ph.D in *Femtosecond Laser Technique in Solid for Ultrafast Electronic and Structural.*

Anti-ragging Day celebration

The campus celebrated Anti-Ragging Day on August 11, 2023, with great enthusiasm. Students engaged in a variety of activities including poster making, essay writing, slogan writing, and rangoli making. Participants were recognized for their efforts with certificates and prizes. Furthermore, students delivered a poignant Nukkad Natak, shedding light on the issues surrounding ragging and its repercussions. The vibrant atmosphere of the event resonated with the collective commitment towards fostering a safe and inclusive campus environment. Through creative expressions and thought-provoking performances, students reaffirmed their dedication to upholding values of respect and dignity for all. Anti-Ragging Day served as a poignant reminder of the collective responsibility to cultivate a culture of mutual respect and support within the campus community.

Orientation Day Celebration ~ *Diksharambh 2023*

Orientation program 2023 was conducted for 1st year students in two phases.

On 19th Aug 2023, BBA and BCA students were welcomed. The event was organized beautifully followed by ***Hasya Kavi Samelan*** and then a wholesome lunch.

On 9th Sep 2023, Students of B.Tech, M.Tech, MCA and MBA were welcomed. A motivational Speaker, Mr. Shikhar Prajapati was invited at the event. He interacted with the students and motivated them with his words of wisdom.

A Band called Azaadi was invited at the event. All the faculty members, students and staff enjoyed the mesmerizing performance of the band.

Additionally, a Club Exhibition was organized, where students had the opportunity to showcase both their minor and major projects.

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A Project on Ring Laser Gyroscope

Figure :- Ring Laser Gyroscope

A ring laser gyroscope (RLG) consists of a ring laser having two independent counter-propagating resonant modes over the same path; the difference in phase is used to detect rotation. It operates on the principle of the Sagnac effect which shifts the nulls of the internal standing wave pattern in response to angular rotation. Interference between the counter-propagating beams, observed externally, results in motion of the standing wave pattern, and thus indicates rotation.

Principle

According to the Sagnac effect, rotation induces a small difference between the time it takes light to

traverse the ring in the two directions. This introduces a tiny separation between the frequencies of the counter-propagating beams, a motion of the standing wave pattern within the ring, and thus a beat pattern when those two beams interfere outside the ring. Therefore, the net shift of that interference pattern follows the rotation of the unit in the plane of the ring.

Forced dithering can largely overcome this problem. The ring laser cavity is rotated clockwise and anti-clockwise about its axis using a mechanical spring driven at its resonance frequency. This ensures that the angular velocity of the system is usually far from the lock-in threshold. Typical rates are 400 Hz, with a peak dither velocity on the order of 1 degree per second. Dither does not fix the lock-in problem completely, as each time the direction of rotation is reversed, a short time interval exists in which the rotation rate is near zero and lock-in briefly can occur. If a pure frequency oscillation is maintained, these small lock-in intervals can accumulate. This was remedied by introducing noise to the 400 Hz vibration.

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 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.