



# MechFAi Momentum Mechanical Engineering Newsletter

Department of Mechanical Engineering  
ICFAI Technical School  
Faculty of Science and Technology  
The ICFAI University Tripura



Vol. 1, March, 2026

## ABOUT THE ICFAI UNIVERSITY, TRIPURA

The ICFAI University, Tripura (referred to hereafter as the University) was established in 2004 through an Act of State Legislature (Tripura Act 8 of 2004). The University has been approved by the University Grants Commission, under Section 2(f) of the UGC Act, 1956. The ICFAI University, Tripura is included in the list of universities maintained by the University Grants Commission (UGC) under Section 2(f) of the UGC Act, 1956, vide their letter No. F.9-7/2006 (CPP-I) dated October 30, 2006. The Distance Education Council (DEC) has approved the programs of the ICFAI University, Tripura. The Bar Council of India has accorded its approval for imparting three year and five-year Law Courses at ICFAI University, Tripura and award degrees in law. The University has received the approval of NCTE to offer the Bachelors Program in Education through its constituent college the Faculty of Education. The ICFAI University, Tripura is included in the list of approved institutions maintained by NCTE. The University has received the approval of The Rehabilitation Council of India (RCI) under the Ministry of Social Justice & Empowerment, Govt. of India to offer the Bachelors Program in Education through its constituent college the Faculty of Special Education. The ICFAI University, Tripura is included in the list of approved institutions maintained by RCI. The ICFAI University, Tripura is a member of The Association of Commonwealth Universities (ACU), London, UK, Association of Indian Universities (AIU), New Delhi, India, The Institution of Engineers (India) and Association of Management Development Institutions in South Asia (AMDISA), Hyderabad. The University believes in creating and disseminating knowledge and skills in core and frontier areas through innovative educational programs, research, consulting and publishing, and developing a new cadre of citizens with a high level of competence and deep sense of ethics and commitment to the code of professional conduct. The Visitor of the University is H.E. The Governor of Tripura. The University is administered as per the Act, Statutes and Rules. The Board of Governors is headed by the Chancellor and has Vice-Chancellor and others as members. The Board of Management is headed by the Vice-Chancellor. The Academic Council is responsible for all academic matters. The University offers Bachelor, Master, and Doctoral programs in management, finance, science and technology, information technology, education, law and other areas.

## ABOUT THE DEPARTMENT

The Department of Mechanical Engineering was established in the year 2010. Since its inception, the Department has contributed to the development of state-of-the-art engineering and technologies while maintaining a strong foundation in core Mechanical Engineering disciplines.

The Department aims to bridge the gap between academia and industry by providing students with a balanced blend of intellectual and practical experiences, enabling them to address industrial and societal challenges and become full-fledged engineers as well as responsible human beings.

The Department offers a robust curriculum that integrates fundamental areas such as Manufacturing, Thermo-Fluids, Applied Mechanics, Machine Design, and Materials Science and Engineering with practical exposure. It is well supported by modern laboratories and an industry-focused curriculum that enhances the overall learning experience.

The Department has consistently contributed to teaching, training, design, development, research, and extension activities. It has made contributions in both core and emerging areas, including Artificial Intelligence and Machine Learning, Data Science, Robotics, Robot Control and IoT, Automation and Control, Nuclear Engineering, and Design-driven Smart Manufacturing. Through its sustained efforts, the Department has produced globally competent Mechanical Engineers capable of contributing through innovation and excelling in multidisciplinary environments.

# FROM THE DESK OF VICE CHANCELLOR



**Prof. Dr. Biplab Halder**  
Vice Chancellor,  
The ICFAI University Tripura

Indian engineering talent is large and highly adaptable, with over 1.5 million graduates annually, but it faces a significant quality–employability paradox. While Indian engineers are widely known for their strong theoretical knowledge, technical proficiency, and “frugal engineering” skills, only a small fraction—roughly 17–25%—are considered immediately job-ready. The strengths of Indian engineering talent include high adaptability, hard work, and proficiency in, or rapid adoption of, new technologies. Engineers are increasingly developing skills in artificial intelligence and machine learning and, to a lesser extent, in hardware-related domains, with growing expertise emerging from tier-2 and tier-3 cities. However, several weaknesses and challenges remain. A significant employability gap exists, with reports suggesting that over 80% of graduates may not be job-ready due to poor communication skills, lack of practical hands-on experience, and outdated curricula. At the same time, industry trends reveal a strong demand–supply gap for specialized, high-end technical skills in areas such as artificial intelligence, data science, design driven manufacturing and electric vehicles. Despite the high output of engineering graduates, only a small percentage are considered job-ready for technical roles, and employers frequently highlight the lack of practical application of theoretical concepts along with weak soft skills.

To address these challenges, the engineering ecosystem must undergo a significant transformation aimed at improving productivity and enhancing client satisfaction. Bridging the gap between academia and industry requires a stronger focus on the practical application of theoretical knowledge, updating curricula to align with the latest industry trends, internship programs with industry, new technologies, and strengthening communication & interpersonal skills that are crucial for employment. In addition, promoting internships, practical training, and project-based learning will help students gain valuable real-world experience. In this context, the STEM approach—Science, Technology, Engineering, and Mathematics—plays a vital role in developing analytical thinking, creativity, and problem-solving abilities among students. Integrating STEM-based learning with engineering education encourages interdisciplinary innovation and prepares students to address complex technological challenges. Indian engineering talent remains a valuable national resource, but it is essential to address the employability gap in order to fully leverage its potential. By emphasizing practical skills, industry-relevant training, and soft skill development, the quality of engineers can be significantly improved and better aligned with the evolving demands of the global technological landscape.

The Department of Mechanical Engineering at ICFAI University Tripura has incorporated cutting-edge courses—Artificial Intelligence and Machine Learning, Data Science, Robotics, Automation & Control, Nuclear Power Engineering, and design-driven manufacturing—into its curriculum to equip students with skills aligned to current industry demands.

# FROM THE DESK OF REGISTRAR



**Prof. (Dr.) A. Ranganath**  
Registrar,  
The ICFAI University Tripura

Mechanical Engineering is often called the "mother" of all engineering disciplines. Studying it provides a diverse toolkit that allows them to design, analyze, build, and move things that shape our everyday lives. I congratulate the Department of Mechanical Engineering, The ICFAI University Tripura, for taking the initiative to publish the Mechanical Engineering Newsletter. This effort reflects the department's commitment to sharing academic activities, student achievements, and the learning experiences within the department.

The Department of Mechanical Engineering is an important part of the University and is dedicated to promoting quality technical education and interdisciplinary learning. The department regularly organizes activities such as technical workshops, seminars, industrial visits, and project-based learning that help students gain practical knowledge and real-world exposure. These activities encourage students to develop both technical skills and confidence.

The publication of this newsletter is a positive step that will help highlight student projects, departmental activities, and alumni achievements. It will also serve as a useful platform for sharing knowledge and inspiring students to actively participate in academic and technical initiatives.

I appreciate the efforts of the faculty members and students involved in bringing out this newsletter and wish the Department of Mechanical Engineering continued success in all its future endeavors.

# Message from the Dean, Academic Affairs



**Prof. (Dr.) Subhasish Chatterjee**  
Dean, Academic Affairs

The Bachelor of Technology (B. Tech.) in Mechanical Engineering program plays an important role in preparing students for careers in modern engineering and technology. Mechanical Engineering is one of the core branches of engineering and supports many industries such as Engineering Design, manufacturing, energy, automotive, robotics, and automation. In today's fast-changing technological world, it is important that engineering education provides students not only with strong theoretical knowledge but also with practical skills to solve real-world problems.

The Department of Mechanical Engineering offers a well-designed curriculum that focuses on both fundamental concepts and modern technologies. Students gain strong knowledge in areas such as design, manufacturing, robotics, additive manufacturing, and thermal engineering. The program also introduces students to emerging technologies such as 3D Printing, Data Science, Industry Coding Practice, Robot Control and Internet of Things (IoT), Artificial Intelligence (AI), Machine Learning (ML), and Nuclear Power Engineering. This helps students understand new technological developments and prepares them for future engineering challenges.

The department also encourages interdisciplinary learning. Today, engineering thinking should not only focus on solving technical problems but also on addressing human needs in a sustainable and responsible way. Students are encouraged to think creatively and develop solutions that are useful for society and the environment.

The Department of Mechanical Engineering continues to work towards excellence in teaching, research, and industry interaction. Through projects, laboratory work, internships, and technical activities, students gain valuable practical experience.

I appreciate the efforts of the faculty members and students in maintaining a strong academic environment and wish the department continued success in its academic and technological initiatives.

# Message from the Dean

## Faculty of Science and Technology



**Prof. (Dr.) Priyangshu Rana Borthakur**  
Dean, Faculty of Science and Technology  
The ICFAI University Tripura

The first volume of the Department of Mechanical Engineering newsletter has been introduced as an initiative to highlight academic activities, achievements, and best practices. This publication serves to showcase the department's ongoing efforts in promoting learning, research, and industry-oriented engagement, while also reflecting the progress made in curriculum development and faculty & student involvement.

Mechanical Engineering is often considered more than just a discipline; it is a way of life that closely connects science, engineering, and technology in solving practical problems. The Department of Mechanical Engineering plays a vital role in maintaining this connection by encouraging innovation, technical learning, and practical applications. The department continuously works on project-based system development and product-oriented learning, enabling students to apply theoretical knowledge to practical engineering solutions.

The department also conducts various skill development programs, technical workshops, seminars, and career counselling activities for students. These initiatives help students improve their technical abilities, build confidence, and prepare themselves for future professional opportunities. Such programs also encourage students to explore emerging technologies and develop strong problem-solving skills.

The department's continuous efforts in promoting practical learning, interdisciplinary thinking, and innovation are commendable. Through projects, technical activities, and academic engagement, students gain valuable experience that strengthens their academic foundation and professional readiness.

I congratulate the Department of Mechanical Engineering for bringing out this newsletter and appreciate the sincere efforts of the department. I wish the department continued success in its academic, research, and technological endeavours.

# Message from the Principal ICFAI Technical School



**Prof. (Dr.) Prasanta Kr Sinha**  
Principal  
ICFAI Technical School

It is a matter of great pride to share my thoughts in the first volume of the newsletter of the Department of Mechanical Engineering. The department has been continuously working towards strengthening technical education and creating an environment that encourages learning, innovation, and professional development. Mechanical Engineering is one of the most important and foundational branches of engineering. It provides students with the knowledge and skills required to design, analyze, and develop machines, systems, and engineering solutions that are essential for modern industries. The Department of Mechanical Engineering at ICFAI Technical School has been contributing to this mission by offering quality education supported by practical training, laboratory work, and project-based learning.

Our faculty members bring a combination of academic knowledge, research experience, and industry exposure that helps students gain both theoretical understanding and practical insight. Their commitment to teaching, mentoring, and guiding students plays an important role in shaping competent engineers for the future. The department also emphasizes hands-on learning through student projects, technical workshops, seminars, industrial visits, and skill development programs. These activities help students enhance their technical abilities, improve problem-solving skills, and gain exposure to real-world engineering challenges. The department's focus on emerging technologies and interdisciplinary learning further strengthens the academic experience of our students.

I congratulate the Department of Mechanical Engineering for taking the initiative to publish this newsletter, which highlights the achievements, activities, and innovative work carried out by the department. I wish the department continued success in its academic and technological endeavors and hope that this newsletter will inspire students to pursue excellence in Mechanical Engineering.

# Message from the Interdisciplinary Department



**Prof. Soumen Sanyal**  
Senior Professor, FMC  
The ICFAI University Tripura

It is a pleasure to share my thoughts with the faculty members and students of the core engineering departments. In today's rapidly changing technological environment, it is essential that engineering education remains closely connected with the needs and expectations of industry.

Students should be encouraged to undertake industry-relevant projects that focus on solving real industrial problems. Such projects help students apply their theoretical knowledge in practical situations and develop skills that are valuable for their future careers. Academic activities should therefore be more oriented toward industrial practices and real-world applications.

Regular interaction with industries is also very important. Departments should build strong connections with industries through industrial visits, expert talks, internships, and collaborative projects. These interactions allow students to understand current technologies, industrial challenges, and professional work environments.

Faculty members and students should also make efforts to take up industry-specific projects in collaboration with companies and organizations. By visiting industries and interacting with professionals, students can identify opportunities where their knowledge and skills can contribute to solving real problems faced by industries.

Strengthening the relationship between academia and industry will not only enhance practical learning but also prepare students to become skilled and responsible engineers. I encourage all departments to continue promoting industry engagement and interdisciplinary collaboration for the benefit of our students and the engineering community.

# Message from the HOD, Mechanical Engineering



**Dr. Amit Kumar Rana,**  
Associate Professor & Head,  
Department of Mechanical Engineering  
The ICFAI University Tripura

This newsletter showcases the accomplishments of our students, faculty members, and the department. It reflects the achievements, dedication, and ambitions of the Department of Mechanical Engineering at The ICFAI University Tripura. I am pleased to note that the department is releasing the first volume of the newsletter, “MechFAi Momentum.

At the Department of Mechanical Engineering, The ICFAI University Tripura, we believe that B.Tech to Ph.D. program in Mechanical Engineering should be delivered in a practical, industry-relevant, and application-oriented manner. Mechanical Engineering learning should not be confined only to classroom teaching; it must also involve laboratory work, project-based activities, and the creativity of students. Our teaching–learning process focuses on building a strong foundation in applied sciences and fundamental engineering concepts while encouraging students to apply this knowledge through laboratory experiments, workshops and digital fabrication, and practical assignments.

We ensure that the department is equipped with modern laboratories and infrastructure so that students can gain practical exposure and meet current industry requirements. Our aim is to develop students into full-fledged engineers equipped with strong fundamental knowledge as well as practical understanding of real-life engineering challenges. Students are encouraged to work on projects, develop prototypes, and participate in technical activities that enhance their problem-solving abilities and innovative thinking.

In today’s rapidly evolving technological environment, engineering education must adopt an interdisciplinary approach. Concepts such as robust system engineering, advanced product design, and lifecycle management are becoming increasingly important. With the growth of Industry 4.0 and the emerging vision of Industry 5.0, technologies such as automation, mechatronics, robotics, and artificial intelligence are transforming the engineering landscape.

Engineers today are expected to analyze technological needs, develop innovative solutions, and transform ideas into practical products and systems for real-world applications. The Department of Mechanical Engineering continuously works to prepare students to become industry-ready professionals who can contribute effectively to technological advancement and societal development.

I welcome you to know more about our department by visiting our department and university website. Please do not hesitate to reach out to me directly.

# Editorial Team Notes

It gives me immense pleasure to present the First Volume of the Newsletter 2026 of the Department of Mechanical Engineering, The ICF AI University Tripura. This newsletter reflects the academic achievements, activities, and collaborative efforts of our faculty members, students, and staff during the past academic years.

The Department of Mechanical Engineering continues to strive for excellence in teaching, research, and industry engagement. Our curriculum is designed to equip students with strong fundamentals in areas such as manufacturing, robotics, additive manufacturing, thermal engineering, and emerging technologies. Through workshops, seminars, guest lectures, technical competitions, and project-based learning, we aim to bridge the gap between theoretical knowledge and practical applications.

The department successfully organized several academic and co-curricular activities including expert lectures, student project presentations, and technical discussions. Such initiatives provide students with valuable exposure to current technological advancements and industry practices. The department also encourages innovation and research-oriented learning, enabling students to develop critical thinking and problem-solving skills.

The achievements highlighted in this newsletter are the result of the collective efforts of our faculty members and the enthusiasm and hard work of our students. Their commitment continues to strengthen the academic environment of the department and contributes to the overall growth of the university.

## *Academic Highlights*

Our curriculum is designed to build strong fundamental knowledge in core and multidisciplinary areas such as manufacturing, robotics, additive manufacturing, and thermal engineering. In addition, students are introduced to modern and emerging technologies including 3D Printing, Data Science, Industry Coding Practice, Robot Control and IoT, Artificial Intelligence (AI) and Machine Learning (ML), Nuclear Power Engineering, Aerodynamics etc. These courses help students stay updated with current industry trends and future technologies.

The Mechanical Engineering Department has established advanced laboratories to support practical learning and modernization. These laboratories provide students with opportunities to gain practical knowledge and hands-on experience in different areas of mechanical engineering. The key laboratories and their functions are described below:

**Materials Science Laboratory** – Helps students understand the properties and behavior of engineering materials through practical experiments.

**Workshop and Digital Fabrication Laboratory** – This lab allows students to convert digital designs into real physical products using a 3D printer. It provides facilities for modern manufacturing and rapid prototyping, encouraging creativity, design thinking, and product development.

**Robotics Laboratory** – This laboratory provides hands-on experience in designing and controlling robotic systems. Students learn about automation, artificial intelligence, sensors, and robotic mechanisms, helping them connect theoretical concepts with real engineering applications.

**Advanced Thermodynamics Laboratory** – This laboratory enables students to perform experiments related to thermodynamic cycles, heat transfer, and energy conversion systems, helping them understand the principles of thermal engineering.

**Manufacturing Process Laboratory** – This laboratory provides practical exposure to different manufacturing techniques such as machining, casting, forming, and joining processes. It also includes training on machine tools such as lathe, milling, drilling, and grinding machines, helping students understand industrial production methods and machining operations.

**Dynamics and Vibrations of Machinery Laboratory** – This

laboratory helps students study the dynamic behavior of mechanical systems and analyze vibrations in machines, which is important for designing stable and reliable mechanical systems.

**Fluid Mechanics Laboratory** – This laboratory helps students understand the principles of fluid flow through experiments related to pressure, velocity, flow measurement, and pipe flow systems.

**Hydropower and Fluid Machinery Laboratory** – This laboratory provides practical knowledge of hydraulic turbines, pumps, and other fluid machinery used in power generation and water resource applications.

**Measurement, Metrology and Instrumentation Laboratory** – This laboratory trains students in the use of precision measuring instruments and techniques for dimensional measurement, calibration, and quality control in engineering applications.

Throughout the academic year, the department organizes workshops, seminars, outreach activities, career counselling sessions, and expert talks on emerging technologies and entrepreneurship. These programs help students gain exposure to new ideas, industry trends, and career opportunities.

To strengthen industry exposure, the department regularly invites industry experts for training programs and technical courses. An industry-relevant course on “Hydraulic Systems and Applications” was provided by the Department of Mechanical Engineering, ICFAI University Tripura, in collaboration with FCP Index & Connections Pvt. Ltd., Pune. Integrated into the B.Tech program, the course provides a comprehensive understanding of hydraulic systems and their applications in sectors such as construction, heavy engineering, power, mining, railways, defense, and automation. Through a blend of theoretical learning, hands-on training, and industry exposure, the initiative bridges the gap between academia and industry, enhancing students’ technical skills, practical knowledge, and overall employability.

Along with the B.Tech. degree, students can also earn additional professional certifications. The department offers Senior Rubber Technician Certification in collaboration with the Rubber Skill Development Council (RCPSDC) under the Skill India initiative, helping students develop specialized industry skills and improve their employment opportunities.

Under the Senior Rubber Technician certification course, in 2025, three students — Saikat Acharjee, Abhijit Deb, and Gunjan Karmakar — received Offer-cum-Appointment Letters under the NAPS/NATS program under the guidance of Dr. Amit Kumar Rana. They were offered apprenticeship-cum-job positions at Machino Plastic (India) Pvt. Ltd., Manesar. This achievement highlights the effectiveness of the skill development program in enhancing students' industry readiness and employment opportunities.

The Department of Mechanical Engineering at ICAFI University Tripura has established several best practices to bridge the gap between academia and industry. A strong emphasis is placed on the practical application of theoretical knowledge, with the curriculum continuously updated to incorporate emerging technologies such as Artificial Intelligence, Machine Learning, Data Science, Robotics, Automation, Nuclear Power Engineering, and design-based manufacturing. Internship programs with industry partners provide valuable hands-on exposure, while dedicated initiatives to strengthen communication and interpersonal skills ensure that students are well-prepared for professional employment and future engineering challenges.

### *Outreach activities and Industrial interaction*

The visit was made as part of industry connect and facility exploration for product development to various workshops, manufacturing centres, and laboratories in the CIPET Complex, along with our Vice Chancellor, Prof. (Dr.) Biplab Halder; Dean FST, Dr. P.R. Borthakur; Senior Prof. Soumen Sanyal and HOD, Mechanical Engineering Dr Amit Kumar Rana. Meaningful discussions on product development and training were held with Mr. P. Vijay Kumar, Joint Director & Head; Mr. Lian Jacob Tangpua Technical Officer, Mr. Monoj Debnath, Asst. Technical Officer, Mr. Sourajit Bose and other officials of CIPET: Centre for Skilling and Technical Support (SCTS), Agartala.



The industry interaction visit was conducted at N.D. Plastic Recycle Unit to provide students with exposure to recycling practices. The facility specializes in collecting waste plastic from the university campus and processing it into plastic granules, including PP granules, plastic scrap, and related products.



On 07 November 2025, a meeting was held at the ONGC Agartala Office between Ms. Sushma Swasthi Pusthi, Deputy Manager (HR), ONGC Agartala, and the CSR Representative of ONGC Agartala, along with Dr. Amit Kumar Rana from the Department of Mechanical Engineering, and Prof. Soumen Sanyal and Dr. Gokul Acharya from the Faculty of Management and Commerce (FMC), The ICAFI University Tripura. The discussion focused on exploring project funding opportunities for initiatives related to societal well-being and strengthening industry–academia collaboration.

An Industry–Academia interaction was held on 15 November 2025 at G Cube Sticks Pvt. Ltd., Bamboo Park, R. K. Nagar Industrial Area, Agartala, between the Technical, Production, and Marketing Team of G Cube

Sticks Pvt. Ltd. and faculty members Prof. Soumen Sanyal (FMC) and Dr. Amit Kumar Rana (Department of Mechanical Engineering), The ICFAI University Tripura. The meeting focused on exploring collaborative opportunities in technical consulting, bamboo-based product development, green energy innovation, and strategic marketing, with special emphasis on effective utilization of local resources, strengthening industry–academia cooperation and career opportunities for our students.





### *Student Achievements*

The Department of Mechanical Engineering encourages students to perform well in academics while also exploring innovation and practical skills. Our students actively take part in competitions, research activities, and industry training programs that help them develop strong technical knowledge and professional abilities. The ICFAI University Tripura is committed to the overall development and well-being of its students. The university provides opportunities for students to grow academically, develop leadership qualities, and understand the importance of ethics and values in life. Along with rigorous academic learning, students are encouraged to participate in extracurricular activities that help in their personal and professional growth.

The ICFAI University Tripura promotes an open and supportive environment that encourages interaction, creativity, and independent thinking, while maintaining strong values and discipline. The university continuously supports students in achieving their goals and aspirations. Students are encouraged to express their ideas, make responsible decisions, and develop confidence to shape their future.

### *Academic Toppers*

Every year, our students achieve outstanding academic results and secure top ranks in their respective semesters. Their dedication to learning, strong understanding of engineering fundamentals, and consistent hard work reflect the academic excellence of the department. The batch toppers for the last five years are listed below:

Sl.No	Year	Name of the Student	Batch Topper
1.	2021	Er. Tuhin Pal	
2.	2022	Er. Pranab Datta	
3.	2023	Er. Mohit Paul	
4.	2024	Er. Rajdeep Debnath	
5.	2025	Er. Abhijit Deb	

### *The Competitive Edge*

Students from the department frequently participate in technical competitions at university, state, and national levels. They have demonstrated their creativity and engineering knowledge in events such as design competitions, technical quizzes, and model exhibitions. Competitions & contests provide a dynamic platform for individuals to exhibit their unique skills, boost self-confidence, and gain recognition for their performances. Our students actively participate in hackathons and project competitions where they develop innovative solutions to real-world engineering challenges. These platforms help them improve problem-solving skills, teamwork, and practical application of technology.



Mr. Vivek Paul, Mr. Abhijit Deb, Mr. Saikat Acharjee, and Mr. Debjit Majumder actively participated in the 34th Tripura Industrial and Commerce Fair, where they showcased an Underwater Submarine Model. The model demonstrated the basic working principle of submarine operation, including buoyancy control and underwater movement. Our students, Sudeep Das and Debu Paul, participated in the ICARIA technical event with this underwater submarine model and got the second prize.



Dwipayan Sutradhar and Ruhit Singha, students of the Department of Mechanical Engineering showcased SMART EYE, an intelligent vision system designed to assist visually impaired people in safe movement. The device uses sensors with audio and vibration alerts to detect obstacles in real time, improving mobility, safety, and independence.



Students showcased a project titled Automated Ceiling Fan Blade Cleaning Attachment in the exhibition. The device features the enclosure with brushes, suction motor, dust collection chamber, and an adjustable extension handle, enabling efficient and ladder-free cleaning of ceiling fan blades. Both student group did their projects under the guidance of Dr. A.K. Rana

Students Mohit Paul and Mananjita Dey achieved remarkable success in the Skill India Competition, winning awards at both the State Level and National Level. Their outstanding performance brought pride to the institution and highlighted their skills and dedication. They were supported throughout the competition by Dr. Subodh Debbarma.



Rudra Samanta Paul emerged as the Champion in the Inter ICFAI Badminton Tournament, showcasing excellent skill, determination, and sportsmanship while representing the institution. His outstanding performance brought pride to the department and highlighted the importance of active participation in sports alongside academic pursuits.



Subhayan Das participated in the Fashion Show event, showcasing creativity, confidence, and enthusiasm. His participation contributed to the vibrant cultural atmosphere of the event and reflected the active involvement of students in extracurricular activities alongside academics.



Our students participated in a workshop on the "Role of Bamboo for Climate Change Mitigation" at the Bamboo & Cane Development Institute (BCDI), Agartala, to gain insight into this discussion.



Agartala, Tripura, India  
 V7cm+3mc, Lichubagan, Agartala, Tripura 799010, India  
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### Internships in Industries

Many students from the department gain valuable industry exposure through internships in reputed companies and organizations. These internships provide practical experience in areas such as manufacturing, automation, product design, and energy systems. Listed below are the Summer Internship Program (SIP) stations, organized to bridge the gap between industry and academia.

Saikat Acharjee	Texmaco Rail & Engineering Ltd, Kolkata	Advanced manufacturing processes for railway wagons, coaches, heavy engineering products, and hydromechanical equipment.
Abhijit Deb	Fluiconnecto, An International company, Pune	Product development processes for hydraulic hoses, fittings, connectors, rigid pipes, hydraulic systems, industrial systems, pneumatic systems, and machinery.
Vivek Paul	Fluid Controls Private Limited, Pune	Manufacturing and quality testing process of fluid control valves and manifolds, fittings, clamps and flange for a variety of applications
Debjit Majumder	Fluid Controls Private Limited, Pune	Manufacturing and quality testing process of fluid control valves and manifolds, fittings, clamps and flange for a variety of applications
Amartya Shekhar Chowdhury	Fluiconnecto, An International company Pune	Product development processes for hydraulic hoses, fittings, connectors, rigid pipes, hydraulic systems, industrial systems, pneumatic systems, and machinery.
Gunjan Karmakar	Texmaco Rail & Engineering Ltd, Kolkata	Production of different types of Railway Wagons
Pritam Baishya	Super Hoze Pvt.Ltd, Baddi, Himachal Pradesh (promoters of Dabur India Ltd)	Quality Control and Hose Selection
Kishalay Debbarma	Super Hoze Pvt.Ltd, Baddi, Himachal Pradesh (promoters of Dabur India Ltd)	Manufacturing of Flexible Industrial Hoses
Rodika Molsom	Super Hoze Pvt.Ltd, Baddi, Himachal Pradesh (promoters of Dabur India Ltd)	Hydraulic Hoses and Pumps: Fluid Conveyance and Power Transmission
Shiva Rupini	G Cube	Sustainable production processes and green technologies for bamboo-based products.
Shankha Shubhra Debnath	Texmaco Rail Pvt. Ltd, Kolkata	Production of different types of Railway Wagons

Some students from the Department of Mechanical Engineering have secured paid internship opportunities in reputed industries, reflecting their strong technical skills and industry readiness. Notably, Pritam Baishya, Kishalay Debbarma, and Rodika Molsom (3rd Year B.Tech Mechanical Engineering students) received paid Summer

Internships at Super Hoze Pvt. Ltd., Baddi, Himachal Pradesh, under the external guidance of Er. Ambarish Chatterjee and Mr. Nitesh Kataria from FCP Index & Connections Pvt. Ltd., and internal guidance of Dr. Amit Kumar Rana.

During the internship, they developed practical skills in quality control and selection of proper hoses, manufacturing processes of industrial (flexible) hoses, and gained knowledge of various types of hydraulic hoses and pumps used for fluid transfer and force transmission in hydraulic machinery. These experiences provided valuable hands-on exposure to real-world industrial practices and enhanced their professional competencies.



Here are a few important summer internship program (SIP) stations for 2025 listed below:

Sl No	Name	ID	SIP Stations in 2025
1	AMIT TRIPURA	22IUT0010063	Fluiconnecto India Pvt Ltd Pune
2	SURAJIT DEBBARMA	22IUT0010064	Fluiconnecto India Pvt Ltd Pune
3	NILOJ MALAKAR	22IUT0010065	Texmaco Rail & Engineering Ltd., Kolkata
4	AGRADEEP DASGUPTA	23IUT0020067	
5	IP KUMAR DEBBARMA	23IUT0020113	IIT Kharagpur
6	MONODIP DAS	24IUT0020078	
7	SUDEEP DAS	23IUT0010216	IIT Kharagpur
8	DEBU PAUL	23IUT0010217	
9	WELSUN MURASING	23IUT0010219	IIT Guwahati
10	MANOJ BADYAKAR	24IUT0020029	
11	MD NURUL HASAN	23IUT0010214	
12	ACKSTEN RAJKUMAR	23IUT0010215	Electrosteel Castings Ltd., Tirupati
13	AVOY JAMATIA	24IUT0020028	NIT Silchar
14	CHAYEL TRIPURA	24IUT0020030	
15	MICHAEL DEBBARMA	23IUT0010218	
16	DAVID DEBBARMA	24IUT0020090	
17	JATIN DEBBARMA	24IUT0020091	

### Scholarships

Several students have been recognized with scholarships and fellowships based on their academic performance, research potential, and overall achievements. These recognitions motivate students to continue striving for excellence. Most of the students received various scholarships; some of their names are listed below:

1. Jayanta Sarkar
2. Mohit Paul
3. Rodika Molsom
4. Kishalay Debbarma
5. Amartya Shekhar Chowdhury
6. Shiva Rupini
7. Gunjan Karmakar
8. Amit Tripura
9. IP Kumar Debbarma
10. David Debbarma
11. Md Nurul Hasan
12. Sudeep Das
13. Chayel Tripura
14. Monodip Das
15. Jakob Debbarma

### *Student Projects*

Students of the department regularly develop new projects that address real-life engineering problems. These projects reflect their creativity, technical knowledge, and ability to apply engineering principles to practical solutions.

Our department proudly nurtures a culture of innovation and experiential learning, where students apply theoretical to practical knowledge under the guidance of our faculty members. Recent projects include:



Electro-Magnetic Train Model by Abantika Baishnab, Pratik Debbarma, and Trwideep Bhowmik Guided by Dr. Subodh Debbarma



Low-cost water purifier for cold, hot & normal water supply by Udit Bhadra, Rudra Samanta Paul, and Samiran Das, Guided by Dr. Amit Kumar Rana



Small-Scale Underwater Vertical Explorer by Subham Das, Saikat Debbarma, and Ashis Rudra Paul Guided by Dr. Pritam Majumder



Smart Device Control via Voice Command Over Phone Call by Rajdeep Debnath, Joy Krishan Roy, and Subhayan Das Guided by Dr. Mrinmoy Dhar.

A project was carried out by our group of students Acksten Rajkumar, Chayel Tripura, Avoy Jamatia, David Debbarma, Welsun Murasing, and Debu Paul from the Department of Mechanical Engineering under the guidance of Dr. Pritam Majumder, carrying out a project for Fabrication of Bricks from Plastic Waste with Wood Dust Reinforcement.

The project “Low-Cost Robot for Smart Healthcare Services in Hospitals” was carried out by Pranab Datta, Arnab Bepari, Purnendu Dey, Gobinda Das, and Mohar Dip Bhowmik. The project focused on developing an affordable robotic system to assist healthcare workers by delivering medicine and food to patients, helping to reduce direct contact and avoid contamination under the guidance of Dr Amit Kr Rana.



Students are encouraged to take up projects based on practical needs and new ideas by using the workshop and laboratory facilities of the University. These facilities provide opportunities for machining and fabrication, similar to those available in industries.

### ***Prototype Exhibition***

By exhibiting their work, they proved that anyone with a passion for engineering can bring that passion to life.



- 3D printing technology enables complex structures like rocket engines and airframes to be manufactured as integrated components, reducing joints and assembly requirements.
- Additive manufacturing helps in rapid prototyping and faster product development in aerospace and advanced manufacturing industries.
- ISRO has successfully tested a 3D-printed rocket engine, marking an important advancement in space technology.
- In May 2024, the Indian startup Agnikul Cosmos launched the Agnibaan SOrTeD rocket with the world’s first single-piece 3D-printed rocket engine.
- Inspired by these developments, a rocket prototype was developed using 3D printing in the Mechanical Engineering Laboratory as part of the department’s prototype exhibition activities.

### ***Introduced Industry collaboration course:***

An Industrial Hydraulics course was conducted by FCP Index & Connections Pvt Ltd, Pune for the students of the Mechanical Engineering Department. The program included theoretical sessions, fieldwork, and laboratory-based training to enhance students’ practical understanding of hydraulic systems. It also provided opportunities for industry exposure and summer internship programs in various industries for participating students.





## Product Development Initiative

A product development initiative to fabricate paver blocks from non-recyclable waste plastic has been undertaken by Prof. Soumen Sanyal and Dr. Amit Kumar Rana, along with supporting staff members, Mr Suman Das and Mr Nipan Debnath. The initiative focuses on converting plastic waste into useful and sustainable construction products through innovative design and fabrication methods. The work was carried out in the Mechanical Engineering workshops at The ICFAI University Tripura, utilizing the available facilities in a manner similar to industry-level fabrication practices. This effort promotes environmental sustainability by reducing plastic waste while encouraging practical engineering solutions for waste management.

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Dated: 15-07-2024

### TO WHOM SO EVER IT MAY CONCERN

This is to certify that **Mr. Kishalay Debbarma S/o Sh. Jogendra Debbarma** has successfully completed the Internship from **10<sup>th</sup> June, 2024 to 13<sup>th</sup> July, 2024** at our Works (Baddi). We wish him all the success in his future life.

for **SUPER HOZE INDUSTRIES PVT. LTD.**

Authorised Signatory



## Industrial visit and study tour

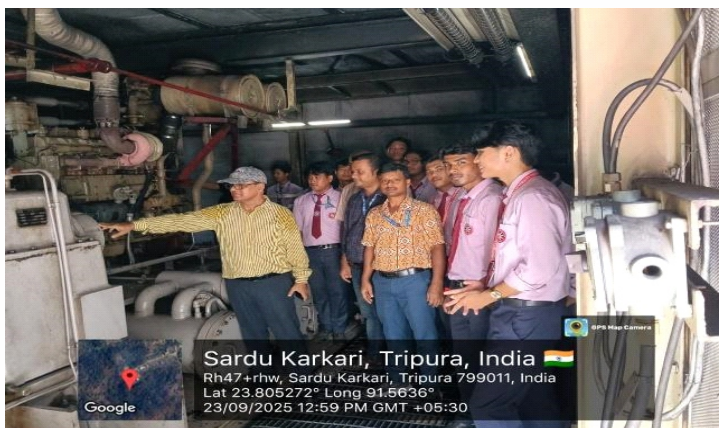
On 02-02-2026, the Department of Mechanical Engineering at ICFAI University Tripura organized a real, ongoing project visit for students to observe the ongoing steel structure construction work on our campus by Bhashyaam Enterprises Private Limited. Engineers explained the fabrication and erection processes of structural components such as columns, beams, and trusses, along with the use of welding, bolting, and lifting equipment. Students also learned about load-bearing capacity, safety measures, and quality control practices. The visit provided valuable practical exposure to real-world steel structural construction.

As part of the Industrial Hydraulics industry-oriented course, several Mechanical Engineering students successfully completed their internship training in reputed industries such as Super Hoze Industries Pvt. Ltd. Baddi (H.P.), Texmaco Rail & Engineering Ltd. Kolkata, Fluiconnecto India Pvt. Ltd. (Pune), and Fluid Control Pvt. Ltd (Pune). These internships provided students with valuable exposure to industrial hydraulic systems, maintenance practices, and real-world engineering applications, helping them strengthen their practical knowledge and industry readiness.





An industrial study tour is a strategic educational tool providing students with first-hand insight into operations and industry methodologies. To foster a practical understanding of theory, the Department of Mechanical Engineering organized a tour of the Baramura Gas Thermal Power Plant, offering students invaluable exposure to industry practices on 23<sup>rd</sup> September, 2025.



### *Participation in Conference, Project Competition and Laboratory Setup:*

During the 3rd International Conference on Mechanical

Engineering (INCOM 2026) held at Jadavpur University, Kolkata, from 8–10 January 2026, our faculty member Dr. Mrinmoy Dhar presented his research paper at the conference. During the event, he also interacted with Prof. Suman Chakraborty, Director of IIT Kharagpur, and discussed emerging research trends in engineering.



Mr. Sidhartha Das, Research Scholar from The ICFAI University Tripura, participated in the 3rd International Conference on Mechanical Engineering (INCOM 2026) held at Jadavpur University, Kolkata, from 8–10 January 2026. He attended technical sessions and interacted with researchers as per the theme of the conference.



Mr. Arup Datta, Research Scholar of Mechanical Engineering, IUT presented a technical paper titled “Development of an Affordable Water Purifier Setup to Supply Cold, Hot, and Normal Drinking Water” at the 6th International Conference on Recent Advancements in Mechanical Engineering (ICRAME 2025) held at the Department of Mechanical Engineering, National Institute of Technology Silchar, Assam, India. The work was authored by Udit Bhadra, Rudra Samanta Paul, Samiran Das, Arup Datta, and Dr. Amit Kumar Rana. The development focuses on designing a simple and affordable water purifier system mainly for household use, capable of supplying cold, hot, and normal drinking water, making it a practical and cost-effective solution for everyday needs.



Mr. Saikat Acharjee and Ms. Rodika Molsom, B.Tech Mechanical Engineering students of The ICAI University Tripura, participated in the Fourth International Conference on Materials Science (ICMS 2024) organized at Tripura University. They presented a research paper titled “Exploring the Potential of Banana Starch Based Biocomposites Reinforced with Bamboo Fibers,” jointly authored by Saikat Acharjee, Rodika Molsom, and Dr. Mrinmoy Dhar.



Another work presented by him was “Tensile and Fatigue Performance of Aluminium Alloys: A Review,” authored by Arup Datta and Dr. Amit Kumar Rana, highlighting the mechanical behavior and performance characteristics of aluminium alloys for engineering applications.



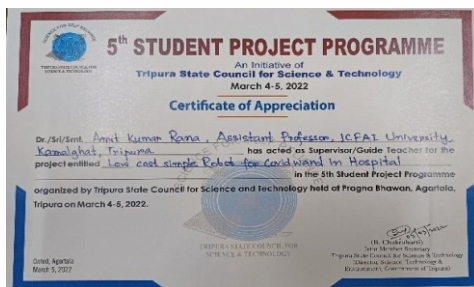
Dr. Amit Kumar Rana presented a research paper titled “RVE-based Micro-Mechanical Modeling of Typical Microstructures to Investigate Deformation Behavior” at the International Conference ICMS-2024. Students Mr. Vivek Paul, Mr. Debjit Majumder, Mr. Saikat Acharjee and Rodika Molsom from our Mechanical Engineering department also attended the conference with him. Mr. Gunjan Karmakar, a student from the Department of Mechanical Engineering, participated in the International Conference on Recent Innovations and Developments in

Mechanical Engineering (ICRIDME 2024) organized by the National Institute of Technology Meghalaya.



In the 8th Student Project Program, Dr. Pritam Majumder, Assistant Professor of Mechanical Engineering at ICAFI University Tripura, joined as a mentor to guide and support students in the development of innovative engineering projects.

Our student attended and showcased their project at the 5th Student Project Program organized by the Tripura State Council for Science & Technology. Mr. Pranab Datta presented a low-cost robot designed for use in COVID-19 wards under the guidance of Dr Amit Kumar Rana.



Dr. Pritam Majumder, Assistant Professor at ICAFI University Tripura, was invited as a Resource Person for a one-day workshop on “Emerging Trends in Additive Manufacturing and Robotics Technology” held on 21 November 2024 at TTAADC Polytechnic Institute, Khumulwng, West Tripura. During the session, he discussed the latest developments, industrial applications, and future prospects of additive manufacturing and robotics in modern production systems.

Dr. Mrinmoy Dhar delivered an expert lecture at the Mechanical Engineering Department of TTAADC Polytechnic Institute, Khumulwng, on “Technologies and Robotics in the Real World in 2025” He discussed the role of automation and robotics in modern industries and encouraged students to develop skills in emerging technologies.

Dr. Amit Kumar Rana delivered an insightful talk on the applications of Artificial Intelligence in Mechanical Engineering and GenAI on 17.02.2026. The program was jointly conducted by ICAFI University Tripura (IUT) and Tripura Institute of Technology (TIT). The session highlighted how AI and GenAI can transform mechanical design, automation, and manufacturing processes. Faculty members and students attended the session.



Under the guidance of our Vice Chancellor, our Mechanical Engineering Department sent Dr. Pritam Majumder, Assistant Professor, to the C4i4 Lab at Savitribai Phule Pune University to understand the integration of advanced equipment and the collaboration between academia and industry. During the visit, he explored the industry-like facilities for robotics, and modern engineering technologies available in their labs.



Dr. Amit Kumar Rana from the Department of Mechanical Engineering delivered a lecture and conducted a training session on 3D printing technology during the workshop-cum-training program held on 18–19 March 2025 for teachers associated with the Atal Tinkering Lab (ATL) at PM SHRI Kamalghat H.S. School, West Tripura. The session introduced the fundamentals and applications of 3D printing and guided teachers in its use for practical work. The program supported knowledge sharing with teachers for the use of modern fabrication technology in ATL activities.



### Social Activity

The Mechanical Engineering Department of ICAI

University Tripura conducts social outreach visits and tree plantation drives every year in different ways, with participation from students and faculty members. These activities, including visits to orphanages and campus greening programs, reflect the department's commitment to social and environmental responsibility.



### Infrastructure updates

The Mechanical Engineering Department has updated existing laboratories and introduced new facilities such as the Materials Science, Digital Fabrication, Robotics, and Instruments Laboratories to enhance hands-on learning and provide students with exposure to modern technologies and practical applications.





## Certification Course:

The Department has collaboration with the Rubber, Chemical and Petrochemical Skill Development Council (RCPSDC) to offer a certification course for students. In addition to the B.Tech degree in Mechanical Engineering, students also get the opportunity to obtain the Senior Rubber Technician certification, a skill development course conducted under the Skill India initiative of the Government of India. This program helps students gain additional practical skills and improves their employment opportunities in the rubber and manufacturing industries, especially considering that Tripura is the second-largest rubber-producing state in India.

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## *Students Organized events in the department*

Every year, the students of the department organize a farewell program for the final year students to express their appreciation and best wishes to the outgoing batch. The event provides an opportunity for juniors and seniors to share their experiences, memories, and encouragement for the future. It also strengthens the sense of bonding and unity among the students of the department. Our students organized a special event to celebrate Teachers' Day in the department. The program included speeches, cultural activities, and expressions of gratitude to honor the valuable contribution of teachers.



## *Alumni Talk*

The Department of Mechanical Engineering, ICAFI University Tripura organized an Alumni Talk Session to guide students on various career opportunities after graduation, including higher studies, competitive examinations, and careers in industries. Dr. Jagadish Barman, who completed his Master's and Ph.D. from the National Taiwan University of Science and Technology, Taiwan, shared his academic journey and research on advanced fabric defect detection. The session provided valuable insights and encouraged students to plan their future careers effectively.



## *Alumni Spotlight*

Some of the Alumni Spotlights are given below to showcase their achievements and career progress.

We are proud Alumni of the Mechanical Engineering program at ICAFI University Tripura. These years spent on campus are the most cherished, and the memories are to be venerated for a lifetime. It is there that we developed a passion for art, culture, sports, science, and leadership skills, in addition to engineering. The institution provides variety of cultural and social amenities, modern laboratory, library, hostel, workshop, playground, and excellent faculty and support staff to encourage students in the development of their overall personality. College fests, dance, music, theater, and other cultural celebrations united students and staff as a family, fostering a harmonious equilibrium between academics and art. Away from the city's hustle and activity, the campus is enveloped by a verdant landscape. I am confident that the mechanical engineering department and institution will be highly rewarding for all students.



**Vivek Paul**



**Saikat Acherjee**

M/s AARVI Engineering & Construction Pvt. Ltd.  
Address: Industrial Growth Centre, Zone 1, Bodhjung  
Nagar, Ramchandranagar, Agartala, Tripura 799008

“As a proud alumnus of Mechanical Engineering Department, ICFAI University Tripura, I can confidently say that the University played a pivotal role in shaping my success. The supportive learning environment and emphasis on holistic development empowered me to secure a position in KONE Elevator India Pvt. Ltd., a global leader in elevator/lift and escalator industry. The University's comprehensive curriculum, combined with passionate faculty members, provided me with a robust foundation that prepared me for the challenges of the real world. I am grateful for the guidance and mentorship I received at ICFAI University Tripura.”



**Er. Nishan Banik**

(An alumnus of ME dept., 2023 pass-out)  
**KONE Elevator India Pvt. Ltd.**

“After completing my B.Tech in Mechanical Engineering at ICFAI University Tripura, I landed a role at a prominent engineering company in Tripura, and I attribute much of my success to the strong foundation I received at ICFAI. The support and guidance from my professors were invaluable, helping me tackle challenges with confidence. The university's practical approach and well-rounded curriculum equipped me with the skills needed to excel in the industry. I'm truly thankful for the experiences that shaped my professional path!”



**Er. Joy Krishan Roy**

(An alumnus of ME dept., 2024 pass-out)  
**Tata Motors Pvt. Ltd**

“I can confidently say that my experience at ICFAI University Tripura laid the groundwork for my passion to peruse higher studies in Mechanical Engineering. The supportive learning environment and focus on holistic development inspired me to pursue my M.Tech. at NIT Agartala, an institute of National Importance. The comprehensive curriculum and passionate faculty provided me with a strong foundation, equipping me to tackle the challenges of higher studies. I am truly grateful for the guidance and mentorship I received at ICFAI University Tripura!”



**Rajdeep Debnath**

(An alumnus of ME dept., 2024 pass-out)  
**M.Tech, NIT Agartala (persuing)**

I am a pass out student of B.Tech. in Mechanical Engineering from ICFAI Technical School, The ICFAI UNIVERSITY TRIPURA. Our Mechanical Engineering department provides every possible facility for a full-fledged engineer with fundamental knowledge but also having a real estimate of the real life that exists outside the University campus for taking higher challenges. After completing my journey of B.Tech. degree in Mechanical Engineering from ICFAI Technical School, I also got job in a highly reputed organization. I worked as a Sr. Quality Engineer, LMG-DBRG Rail Project, KEC International Limited. Currentl working in Oval Projects Engineering Limited.



**Biswajit Debnath**

**Oval Projects Engineering Limited**

My name is Mananjita Dey, I am a pass out student of B.Tech. in Mechanical Engineering from ICFAI Technical School, The ICFAI University Tripura. The department of Mechanical Engineering focuses on experimental and current-era-based learning, which is why a lot of emphasis is given to practical-driven education in the form of the latest technologies, an updated Lab, and opportunities to showcase student learning from various seminars, workshops, conferences, webinars, technical events and fest. We have faculty members from premier institutes like Jadavpur University, IIT, IEST, NIT etc. Moreover, the faculty members of our department and laboratories everything in our department as well as in the University is excellent.



**Mananjita Dey**

Design Engineer  
**Airtouch Solar India Pvt Ltd.**

It is a great honor to be able to share my journey since graduating from ICFAI University Tripura with a degree in Mechanical Engineering. The transition from student life to the professional world has been both challenging and rewarding, and I am grateful for the solid foundation the university helped build for me. Currently, I work at Amazon as a Support Ops Specialist, where I focus on data-driven investigations for the North American and Canadian marketplaces. My role involves identifying discrepancies, detecting fraud, and ensuring the accuracy of reimbursements. This experience has strengthened my problem-solving skills, analytical thinking, and attention to detail—traits I began cultivating during my time at IUT. ICFAI not only provided me with technical knowledge but also instilled a mindset of continuous learning and adaptability. The values and skills I developed here have been crucial in navigating the fast-paced and dynamic environment of the Corporate world.



**Debanjan Pal**  
Support Operations Specialist  
**Amazon**

Reflecting on my academic journey, I credit ICFAI University Tripura with equipping me with the core knowledge and inspiration necessary for my academic advancement. The supportive atmosphere allowed me to thrive and cultivate a passion for higher studies in mechanical engineering. Sincere thanks to the faculty for their invaluable mentorship.



**Rodika Molsom**  
M.Tech, NIT Agartala (pursuing)

It gives me immense pride to extend my heartfelt best wishes to the Department of Mechanical Engineering, where I completed my B.Tech./Mechanical Engineering journey. The department has been the foundation of my academic growth, nurturing curiosity, discipline, and

innovation. The guidance and support I received from faculty and peers continue to inspire me as I pursue my M.Tech. at Tripura University. I am deeply grateful for the opportunities and values instilled here, which have shaped both my professional path and personal outlook. May the department keep flourishing and guiding future engineers toward excellence and meaningful contributions.



**Abhijit Chakraborti**

As an alumnus of the Mechanical Engineering Department, I extend my warm wishes to the department that laid the foundation of my academic journey. The focus on project-based learning, practical workshops, and teamwork has been invaluable in shaping my skills and confidence. These best practices continue to inspire me as I pursue my M.Tech. at Tripura University. I remain grateful for the guidance and opportunities provided, and I wish the department continued success in nurturing future engineers and driving innovation.



**Ashis Rudra Paul**

My name is Pranab Datta, and I am a proud graduate of the Department of Mechanical Engineering, ICFAI University Tripura, from the batch of 2022. My journey at the university has been a transformative experience that helped shape both my technical knowledge and professional outlook.

During my time in the department, I gained a strong foundation in mechanical engineering through a combination of theoretical learning and practical exposure. The well-equipped labs, supportive faculty, and emphasis on hands-on projects played a crucial role in building my problem-solving abilities. The university not only focused on academics but also encouraged overall personality development, which has been extremely valuable in my career.

Currently, I am working with DS Group in the Rubber Thread Unit, where I am involved in the production process of converting natural rubber into Rubber Thread. This role allows me to apply my academic knowledge in a industrial manufacturing environment, and I continue to learn new aspects of industrial processes every day.

Workplace Details: Rubber Thread Unit, DS Group, Zone - 1, Industrial Growth Center,

Bodhjung Nagar, Agartala - 799008, Tripura, India

I am grateful to my department and university for providing me with the right platform and guidance to start my professional journey. I hope my experience inspires current students to make the most of the opportunities available and strive for excellence in their careers.



**Pranab Datta**

Rubber Thread Unit, DS Group  
Zone - 1, Industrial Growth Center,  
Bodhjung Nagar, Agartala - 799008, Tripura, India

All our alumni are working in different companies, and some of them have started their own businesses as entrepreneurs. Their success reflects the quality of education and training provided by the department.

**Industrial Excursions**

The Department of Mechanical Engineering organized an excursion to give students exposure to various practices. This initiative allowed them to observe manufacturing systems and understand and see the system and applications.

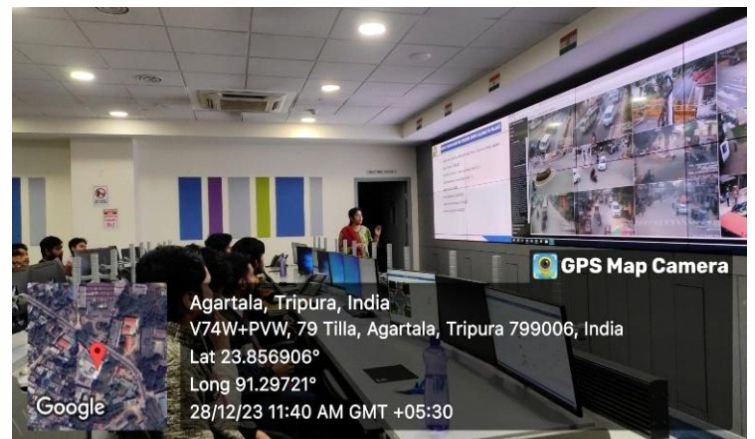


The students and faculty members interacting with the industry professionals at OTPC Palatana.



The students along with the faculty members and the industry experts in front of the water reservoir at ONGC Tripura Power Company (OTPC) Palatana.

The department organized industrial excursions to IT Bhavan, Indranagar, Agartala, Tripura; Dasamighat, Agartala, Tripura; and Science City, Agartala, Tripura to provide students with practical exposure and learning beyond the classroom. A resource person from the Smart City Project team at IT Bhavan, Indranagar, Agartala, delivered a presentation to the students and faculty members.





The entire team of students and faculty members, along with the resource persons from the Smart City Project team, gathered in front of IT Bhavan, Indranagar, Agartala. After that, the students and faculty members also visited Dasamighat, Agartala, where they observed the ongoing Howrah Riverfront Development Project work.

### Highlights of the events:

#### 1. Five Days Workshop On “Mechatronics System Design and Prototype Development”



Digital transformation has significantly accelerated the adoption of modern technologies, leading to the development of flexible and multifunctional smart products.

#### 2. National Workshop on “Hydraulic Systems and Application in Indian Industry”



A knowledge sharing session on the usage of Hydraulic Systems and Components for high-performance motion and control technology in the Indian industry was conducted for students. The session discussed the role of hydraulic systems in various industry segments, including equipment manufacturers, EPC companies, hydraulic component manufacturers, and system integrators. It also highlighted multidisciplinary job opportunities in these sectors and the important skills required for students to work in the hydraulic and automation industry.



**Industry Relevant Course**  
on  
**Hydraulic Systems and Applications**  
INAUGURATION CEREMONY

Introduced under  
Department of Mechanical Engineering  
ICFAI University Tripura



**Chair**  
Prof. (Dr.) Biplob Halder  
Vice-Chancellor  
ICFAI University Tripura

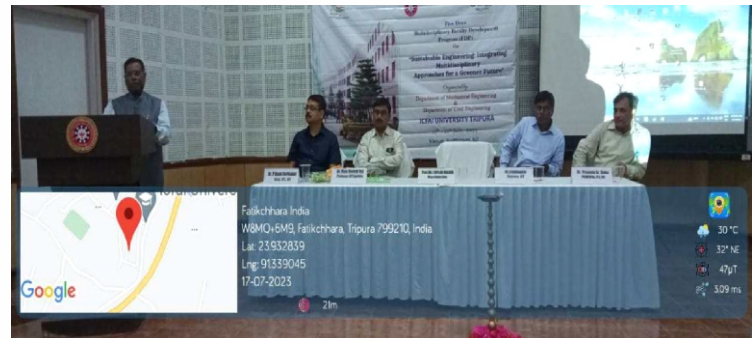


**Resource Person**  
Er. Ambarish Chatterjee  
(B.T. Kanpur)  
Principal Consultant  
FCP Index and Connections, Pune



Date: 18<sup>th</sup> March 2024, Time: 11:00 AM / Venue: Auditorium, ICFAI University Tripura

#### 3. Five Days Multidisciplinary Faculty Development Program (FDP) On “Sustainable Engineering: Integrating Multidisciplinary Approaches for a Greener Future”



A Five Days Multidisciplinary Faculty Development Program (FDP) on “Sustainable Engineering: Integrating Multidisciplinary Approaches for a Greener Future” was organized to promote awareness and knowledge on sustainable engineering practices. The program focused on integrating different engineering disciplines to address environmental challenges and develop innovative solutions for a greener and sustainable future.

#### 4. A seminar on “Industry 4.0, Product Design, Innovation and Cutting-Edge Technological Achievements” was jointly organized by ICFAI University Tripura and the MSME Technology Development Centre (Design Centre) on 19.11.2025.

The seminar aimed to enhance students’ understanding of modern industrial technologies, smart manufacturing systems, and the growing importance of innovation in product development. The session was attended by students and faculty members who actively participated to gain insights into emerging technological trends and their applications in modern industries. The expert lecture was delivered by **Dr. Dipak Debbarma**, Associate Professor and Head of the Mechanical Engineering Department at Tripura Institute of Technology.

During the lecture, Dr. D. Debbarma explained the concept of Industry 4.0 and its impact on modern manufacturing systems, highlighting advanced technologies such as automation, Internet of Things (IoT), smart manufacturing, and digital integration in industrial processes. He also emphasized the importance of innovative product design and the role of research and creativity in achieving cutting-edge technological advancements. Through practical examples and discussions, he encouraged students to develop interdisciplinary knowledge and adopt modern engineering tools to meet future industrial challenges. The seminar provided a valuable learning platform for students and inspired them to explore innovative technological solutions in engineering and manufacturing fields



5. On October 30, 2025, ICFAI University Tripura hosted an enlightening guest lecture titled “From Flint to Fusion: A Journey Through Manufacturing and Surface Engineering”. The event was organized by the Department of Mechanical Engineering, ICFAI Technical School, under the esteemed patronage of Prof. (Dr.) Biplab Halder, Vice Chancellor. Dr. Vidyut Dey’s lecture captivated the audience by connecting historical milestones in manufacturing with present-day innovations.



#### 6. Workshop on “CAD and Robotics”

The Department of Mechanical Engineering, ICFAI University Tripura, organized a workshop on “CAD and Robotics” on 8 April 2025 to provide insights into the applications of CAD and robotics in modern design and manufacturing. The program included expert lectures and a hands-on session, with talks delivered by Mr. Lian Jacob Tangpua (CIPET) and Mr. K. Kulkarni (FCP Index Pvt. Ltd., Pune).



**7. Two-day multidisciplinary Seminar/talk on “Advancement of Aluminium alloys and their remarkable properties”**

**Two-day multidisciplinary Seminar/talk**  
 on  
**Advancement of Aluminium alloys and their remarkable properties**  
 Organized by  
**Department of Mechanical Engineering**  
 &  
**ICFAI Science School**  
**Faculty of Science & Technology**  
**ICFAI University Tripura**

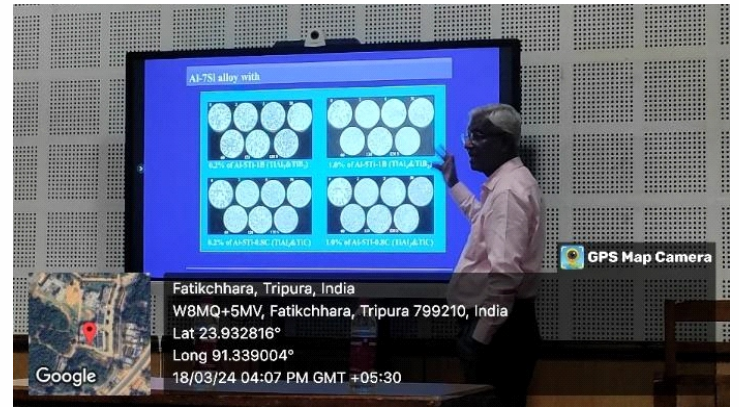
**Chair**  
Prof. (Dr.) Ajaykumar  
Bhattacharya  
ICFAI University Tripura

**Speaker**  
Prof. (Dr.) Madhusudan Chakraborty  
Former Director of IIT Bhubaneswar,  
Former Professor and Deputy Director of IIT Kharagpur,  
Emeritus Professor, ICFAI University Tripura

**Topics**

- DAY 1  
Green synthesis of  
aluminum and its alloys
- DAY 2  
New processes for  
new aluminum alloys

Date: 18<sup>th</sup> - 19<sup>th</sup> March 2024, 03:00 PM to 04:30 PM, Venue: ICFAI University Tripura **10AM - 11AM (19.03.2024)**



A two-day multidisciplinary seminar on “Advancement of Aluminium Alloys and Their Remarkable Properties” was conducted with a talk delivered by Prof. (Dr.) Madhusudan Chakraborty, Former Director of IIT Bhubaneswar, Former Professor and Deputy Director of IIT Kharagpur, and Emeritus Professor at The ICFAI University Tripura. The seminar highlighted recent developments and the use of aluminium alloys as conducting materials in modern engineering applications.

**8.Seminar on “Overview and Career Prospects of Rubber Technology**

The development of skills for the rubber industry is one of the most critical issues faced today. These sectors struggle a demand & supply mismatch, as the industry needs a more 'skilled' workforce than what is available today. The purpose of this skill course is to ensure the generation of skilled manpower in rubber sectors, provide employment opportunities to youth across the nation, create career paths in roles existing within the unorganized and organized segments of the rubber sector and ensure active participation of the industry in absorption of skilled manpower generated through Rubber, Chemical Petrochemical Skill Development Council (RCPSDC), Skill India.



## 9. Classification of Human Activities Using Microwave Imaging Technique Based on ML Approaches

### Classification of Human Activities Using Microwave Imaging Technique Based on ML Approaches



Dr. Banani Basu

Associate Professor, Dept. of Electronics & Communication Engineering,  
National Institute of Technology Silchar,



Awareness of the design fraternity and its expertise was intended to be provided on a common platform through

this event. Expert advice and cost-effective solutions for real-time design problems were aimed to be offered for both new product development and the enhancement of existing portfolios. This specialist guidance was provided by experienced designers to ensure comprehensive support across all stages of the design process.

## 10. A Guest Lecture On “Nonlinear Vibration: An Introduction”



A lecture on vibration in engineering systems was delivered by Dr. Anirban Mitra, Associate Professor, Department of Mechanical Engineering, Jadavpur University, Kolkata, India. Vibration is a fundamental aspect of engineering that affects the performance, safety, and reliability of mechanical systems and structures. Understanding and controlling vibrations is crucial in various fields of engineering, including mechanical, civil, aerospace, automotive, and structural engineering. Excessive vibrations can lead to material fatigue, structural failure, and catastrophic collapses. Engineers must analyze and mitigate vibrations to ensure the longevity and safety of structures such as bridges, buildings, and machinery. Vibrations are an inherent part of all physical systems, and their effects are pervasive across various engineering disciplines. Effective management of vibrations enhances safety, performance, comfort, and precision, making it a cornerstone of modern engineering practice.

### 11. Two-day Workshop on “Innovate and Elevate: Entrepreneurship in Rubber Technology ”

This workshop explores the dynamic landscape of natural rubber products and entrepreneurship, with a focus on the potential for growth in Tripura. Attendees will learn about the diverse range of over 46,000 rubber products and their unique market potentials, along with tools for nurturing local entrepreneurship. Emphasizing sustainable innovation, the workshop will showcase how rubberized entrepreneurs are driving environmental and economic benefits through recycling, community development, and technological advancements.



### 12. Two-Day Workshop on Robotics and 3D Printing Technology



### 13. Workshop on “Emerging Trends in Mechanical Engineering: Robotics and 3D Printing Technology



The Department of Mechanical Engineering at ICAFI University, Tripura successfully conducted a workshop on “Emerging Trends in Mechanical Engineering: Robotics and 3D Printing Technology” on 16th January 2025. Held in the Robotics and 3D Printing Lab, the workshop brought together students, faculty members, and enthusiasts to explore innovations that are shaping the future of the engineering world.

### 14. Guest lecture session on “Application of Laser in Manufacturing and Medical Diagnostics”

The session focused on the applications of laser technology in manufacturing and medical diagnostics. The lecture was delivered by Dr. Subrata Kumar Ghosh, Associate Professor, Department of Mechanical Engineering, NIT Agartala, who shared valuable insights on the practical and innovative uses of lasers with faculty members and students.





Faculty members had the privilege of interacting with Prof. Madhusudhan Chakraborty and Prof. Tapan Kumar Basu, retired professors from IIT Kharagpur. The interaction provided valuable insights and guidance on academic development, research, and engineering education.



## **Project and Publications by Faculty and Students**

### **Ongoing project**

1. 1 kW Vertical Axis Wind Turbine (VAWT) Principal Investigator Dr. Amit Kumar Rana, Associate Professor, Department of Mechanical Engineering and Co-Principal Investigator Prof Soumen Sanyal, Professor, FMC of the ICFAI University Tripura, Kamalghat, Mohanpur, Tripura(W), India, Funding agency/industry: M/s Renelectic, 2026

### **Patent**

1. **Amit Kumar Rana**, et al., 2025. Surgical Robotic Arm Assembly with Integrated AI Camera Housing. GB Patent. Published on 6 December 2025.

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1. Arup Datta, Amit Kumar Rana, S. K. Ghosh, and R. K. Ghadai, 2026 "Mechanical and Microstructural Property Assessment of Recycled Al-alloys for Automotive Application: A sustainable Engineering Solution." *Journal of Materials Research and Technology*, 41, 3304-3316.

2. Amit Kumar Rana, B. Sikder, and S. Kundu. "Artificial Intelligence and Machine Learning Applications in Mechanical Engineering: A Contemporary Trend." *International Journal of Engineering Research & Technology* 14(12), 1-11

3. Arup Datta and Amit Kumar Rana, 2025. Chemical composition design in cast aluminum alloys for enhanced microstructure and functionality. *Discover Chemistry*, 2(1), pp. 1–17. Singapore: Springer Nature.

4. Arup Datta, Amit Kumar Rana and R. K. Ghadai, 2025. Machine learning-driven nonlinear analysis of inclusion effects in aluminium alloys. *Scientific Reports*, 15(1), Article number 35866. London: Nature Publishing

5. Shambhu Roy, Abhishek Saha, Abhijit Deb and Amit Kumar Rana, 2025. Design and Construction of Involute Spur Gear. *IJSAT – International Journal on Science and Technology*, 16(4), 1-18.

6. Amit Kumar Rana, R. Basu, P. Das and P. Mahata, 2025. Elastic–plastic FE analysis for specimen J-resistance curve of 22NiMoCr37 steel. *AIP Conference Proceedings*, 3263, Article 180003 AIP Publishing.

7. Amit Kumar Rana, S. Kundu and S. Kayal, 2024. Digital fabrication with FDM 3D printing on prototype development of toys: Additive manufacturing and sustainability. *E3S Web of Conferences*, 552, Article 01018. EDP Sciences.
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9. Pranab Datta, Srinjoy Roy, Amit Kumar Rana and Prasanta K Sinha, 2023. Low-cost Robot for Smart Healthcare Services in Hospital. In: 2023 IEEE Silchar Subsection Conference (SILCON). IEEE, pp. 1–6.
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12. Siddhartha Das, Mrinmoy Dhar (2026). Viscous shear induced internal hydraulic jumps in stratified gas-liquid counter current flow: Shallow water analysis. *International Journal of Fluid Mechanics Research*, doi:10.1615/InterJFluidMechRes.2026061181.
13. Dhar, Mrinmoy, and Palash Dey. "Phase change material integrated building envelope toward SDG aligned sustainable solutions: Numerical and artificial intelligence driven analysis." *Environment, Development and Sustainability* (2026): 1-23.
14. Mrinmoy Dhar, Sapkota, S. C., Prasenjit Saha, and Sameer Arora (2025). Evaluating discharge coefficient of rectangular sharp crested weirs using machine learning models. *Water Resources Management*, 39(8), 4151-4171.
15. Dey, P., Paul, A., Mrinmoy Dhar, & Laskar, S. M. (2025). Optimizing Autoclaved Aerated Concrete Properties and Cost Efficiency by Utilizing a Hybrid Strategy of Response Surface Methodology and Desirability Approach. *Circular Economy and Sustainability*, 1-24.
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21. Majumder, Pritam, Mridusmita Roy Choudhury, Gunjan Karmaka, Pritam baishya, and Shweta Singh. "Optimizing aerodynamics: Numerical flow analysis for drag and lift reduction in SUV designs." *Interactions* 245, no. 1 (2024): 338.
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- Kayal, S., Amit Kumar Rana, and S. Kundu. "Blockchain Integration for Enhanced Trust and Security in Federated Learning for Healthcare 5.0." In *The Convergence of Federated Learning and Healthcare 5.0 and Beyond: A New Era of Intelligent Health Systems*, part of the book series: *Studies in Computational Intelligence (SCI)*, volume 1247, pp. 633-657. ISBN 978-3-032-03984-2, Publisher Springer, Cham, 2026.
  - Badyakar, M., Hasan, M.N., Debbarma, J., Debbarma, M. and Amit Kumar Rana, 2025. Human-machine Interfaces (HMI) for Smarter Machines: Industry 1.0–5.0. In: *Design, Build and Industry-Integrated Mechanical*

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16. Subodh Debbarma, Abantika Baishnab, Tridweep Bhowmik, Pratik Debbarma. “Model of an Electromagnetic Train.” In Industrial Perspective of

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### Edited Book

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18. Amit Kumar Rana, Mrinmoy Dhar, Pritam Majumder, and Subodh Debbarma, Prasanta Kumar Sinha eds. 2024. Industrial Perspective of Mechanical Engineering: A Project-Based Learning Approach, ISBN: 978-81-964208-4-0, pp.1-84, IUP Publication.

### Editorial Team

**Dr. Amit Kumar Rana**, Issue Editor; Associate Professor & Head, Department of Mechanical Engineering, IUT

**Dr. Minmoy Dhar**, Editorial Member & Assistant Professor, Department of Mechanical Engineering, IUT

**Dr. Pritam Majumder**, Editorial Member & Assistant Professor, Department of Mechanical Engineering, IUT

**Dr. Subodh Debbarma**, Editorial Member; Associate Professor, Department of Mechanical Engineering & Associate Dean, Student Affairs, IUT

**Dr. Prasanta Kr Sinha**, Editorial Member, Advisor, Professor, ME & Principal, ITS, IUT



**Dr. Amit Kumar Rana**



**Dr. Minmoy Dhar**



**Dr. Pritam Majumder**



**Dr. Subodh Debbarma**



**Dr. Prasanta Kr Sinha**

### Design Team:

1. **Mr. Sujit Sutradhar**  
Deputy Manager IT, CIMS Coordinator, Admission Coordinator
2. **Mr. Riki Karmakar**  
Administrative officer
3. **Mr. Ankur Ghosh**  
Graphic Designer

### USPs of Mechanical Engineering at ICFAI University Tripura

- Merit Scholarships (NJY Scholarship from the University, SC/ST/OBC Scholarships from the Government of Tripura, and NE Scholarship from the North Eastern Council)
- Free Wi-Fi facility across the campus
- Summer internships with Industry and reputed Institutes
- Expert talks by experienced industry professionals and renowned faculty members from national-level premier institutes
- In addition to the B.Tech degree, students can obtain Senior Rubber Technician Certification under the Skill India Initiative of the Government of India
- Smart classrooms with modern teaching facilities
- Real-life problem-solving project execution
- Collaboration with industries for practical exposure
- Industry-ready co-curricular activities
- Career recruitment training (Group discussion, personal interview, communication skill development, and software training)
- Placement opportunities in reputed industries, study in Abroad, TPSC, PSUs, etc.
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- Opportunities to participate in national and international conferences
- Faculty members from premier institutions such as IITs, IIST Shibpur, Jadavpur University Kolkata, and NITs
- A modern Mechanical Engineering curriculum including advanced topics such as Nuclear Engineering, AI & ML, Robotics, Digital Fabrication, IoT, and Sustainable Energy, along with traditional core subjects

## Our Resources

Experience global exposure through French and Japanese Language electives and collaborative projects with IIT Delhi (Virtual Lab setup).

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#### ICFAI University Tripura

Campus-Kamalghat, Mohanpur,  
Agartala -799210, Tripura (W), India  
Ph: +91381-2865752/62,  
7005754371, 9612640619,  
8415952506, 9366831035,  
8798218069, 93780 44032

#### ICFAI Office - Silchar, Assam

1st floor, c/o surma Valley  
(g-next building), hospital road,  
Silchar-788001  
Ph: 76379 68599, 6001351889  
9101555707

#### ICFAI City Office - Agartala

Colonel Chowmuhani, House no. 226797,  
Palace Compound, Agartala -799001,  
Tripura (W), Ph: +91381-2329198, 7005302245

#### ICFAI Office - Manipur

Uripok palem Leikai, Mahum Building 3rd Floor,  
Imphal West, Pin- 795001, Manipur.  
Ph: 8974496850, 8974496714

#### ICFAI Office - Siliguri

Opp. Anjali Jewellers Ramkrishna Road, Beside Sarada Moni  
School P.O. & P.S. Siliguri. Ashrampara. Pin - 734001  
Ph: 9933377454

#### ICFAI Office - Guwahati

Abani Complex, 1st floor, M C.Road,  
Near Guwahati Club, Guwahati-781003  
Ph: +913613595807, 9854116517, 7086011651

#### ICFAI Office - Kolkata Office

195, Canal Street, Shreebhumi Bus Stop,  
Near Vivekananda Statue  
Shreebhumi, Kolkata-700048  
Phone:- 7003634670, 9883791321,  
03340042837