

ISE NEWSLETTER

DEPARTMENT OF INDUSTRIAL & SYSTEMS
ENGINEERING, IIT KHARAGPUR

2025

The Department of Industrial and Systems Engineering (ISE)

was established in 1973 as the Industrial Management Centre and later elevated to a full-fledged department in the year 1983. With strong focus in research and innovation, together with academic programs tailored to address the needs of the present day technological evolution, ISE has emerged as a unique academic institution in the country. ISE offers the following degree programs:

- **B.Tech (4-year)** - B. Tech in *Industrial Engineering*.
- **Dual Degree (5-year)** - B.Tech. in *Industrial Engineering* and M.Tech in *Industrial Engineering and Management*.
- **Dual Degree (5-year)** - B.Tech in *Manufacturing Science* and M.Tech in *Industrial Engineering and Management*.
- **Dual Degree (5-year)** - B.Tech in *Engineering Product Design and Manufacturing* and M.Tech in *Design and Quality Engineering*, with *Mechanical* or *Industrial Electronics* verticals.
- **M.Tech (2-year)** - M.Tech in *Industrial Engineering and Management*.
- **M.Tech (2-year)**- M.Tech in *Operation Research & Data Analytics*
- Master of Science (MS).
- Doctor of Philosophy (PhD).
- Post-doctoral Fellowship (PDF).

Head of the Department:
Prof. Jitendra Kumar Jha

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(Assistant Professor)

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Mr. Satyajit Pradhan
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Message from the Head of the Department

HOD's Desk

Greetings and welcome to the **Department of Industrial and Systems Engineering (ISE), IIT Kharagpur**. I am happy to share with you the departmental brochure. Over the period of past fifty years, our department has emerged as a knowledge hub to educate students, scholars and professionals in all the disciplines of ISE. Our faculty members bring a diverse range of academic and industry experience. Apart from teaching, they are engaged in cutting edge research and developments funded by various government bodies and private companies. We regularly publish research findings in reputed international journals and present our work in international conferences. Our outreach programs include workshops, short-term courses, industry training programs and conferences.

In the last 50 years the department has earned its reputation across the world for excellent teaching and research in the fields of Operations Research, Data Analytics, Logistics and Supply Chain Management, Quality Engineering, Information Systems and E-Business, System Thinking and Policy Planning, Human Factors Engineering and Ergonomics, Safety Analytics and Virtual Reality, and Healthcare Systems.

The ISE graduates regularly find employment in reputed large corporations. They also pursue higher education in renowned universities across the world. Our PhD program has produced many educators who are placed as faculty members in various IITs, IIMs, NITIE and other universities across India, and abroad.

The year 2023 was a special year as ISE completed its 50 years of journey. We organized several events to celebrate the golden jubilee, in the form of short-term courses, lecture series, tech festival (OPTIMA) and an International Conference (ICONIEA 2024). We hope this will create better awareness about our department in the larger community of prospective students, scholars, faculty and practitioners. Come, join the ISE family and let us work together in pursuit of excellence to the service of the mankind.



Prof. J.K. Jha

**Head of the Department,
Department of Industrial &
Systems Engineering,
IIT Kharagpur**

Workshops and Webinar

SPARC-UKIERI



Prof. Akhilesh Kumar

The ISE Department successfully organized the SPARC-UKIERI Course on “**Semiconductor Supply Chain Network Design**” from 7th to 14th August 2025 in the ISE Seminar Room. The program was convened by Dr. Akhilesh Kumar, with Dr. Sri Krishna Kumar as Co-convenor.

The course featured expert sessions by distinguished academicians, including Prof. Alok Choudhary (University of Warwick), and ISE-IIT Kharagpur faculty members including Prof. Anand Abraham, Prof. Abhishek Sharma, Prof. Sarada P. Sarmah, and Prof. Jitendra K. Jha. Key topics covered included semiconductor supply chains,

simulation, optimization, inventory management under uncertainty, production planning and scheduling, and supply chain analytics. The program also included hands-on lab sessions, fostering practical understanding. The event witnessed active participation from students and researchers.



Prof. Sri Krishna Kumar



Prof. Alok Choudhary

Workshops and Webinar

Short term course on “Supply Chain Optimization & Analytics”

Workshops and Webinar



The ISE, IIT Kharagpur, successfully conducted a short-term course on “**Supply Chain Optimization and Analytics**” (SOA-2025) from 22nd to 24th September 2025 in hybrid mode, enabling participation through both online and offline platforms. The course was coordinated by Dr. Abhishek Sharma with Dr. J.K. Jha and Dr. S.P. Sarmah as Co-Coordinator.

The workshop provided an enriching learning experience, bringing together participants from academia and industry to engage with contemporary concepts,

analytical tools, and practical perspectives in supply chain optimization and analytics. The interactive sessions, discussions, and hands-on components contributed to a productive and insightful exchange of knowledge. We extend our sincere appreciation to the resource persons, participants, organizers, and coordinators for their enthusiastic involvement and contributions, which played a vital role in the successful completion of the workshop. The department remains committed to organizing such academic and professional development initiatives that foster learning, collaboration, and innovation.



Workshops and Webinar

Faculty Achievement

Springer Nature Research Award

We are delighted to announce that **Professor Jhareswar Maiti** of the Department of Industrial and Systems Engineering, IIT Kharagpur, has been honored with the prestigious **Springer Nature Research Award**. This award was presented as part of the India Research Tour 2025. The India Research Tour 2025 is a nationwide initiative organized by the MINISTRY OF EDUCATION, GOVERNMENT OF INDIA and Springer Nature in collaboration with the Indian Council of Social Science Research (ICSSR). This tour focuses on promoting research integrity, inclusivity, and innovation across various institutions.

Faculty Achievement



Faculty Achievement

Prof. Jhareswar Maiti

Faculty Achievement

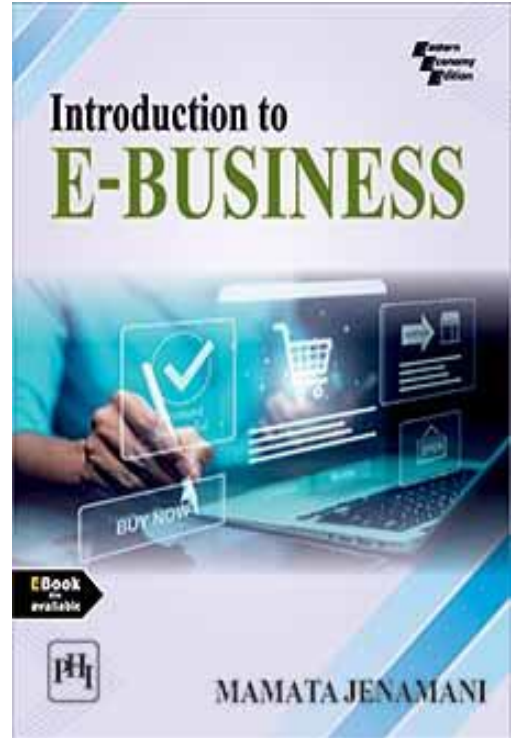
Introduction to E-Business

By Prof. Mamata Jenamani

Faculty Achievement

ISE-IIT Kharagpur warmly congratulations to our **Professor Mamata Jenamani** on the publication of her book, **Introduction to E-Business**, published by PHI Learning. This accomplishment reflects her academic excellence, dedication to teaching, and significant contribution to knowledge creation in the domain of e-business and digital systems. The publication serves as a valuable resource for students, researchers, and practitioners, and further strengthens the scholarly impact of our department and institute.

We are proud of Professor Jenamani's achievement and wish her continued success in her academic and research endeavors.



Faculty Achievement

Prof. Mamata Jenamani

Faculty Achievement

Invited Talk on “Data Analytics for Asset Management” at Federation University, Melbourne



We congratulate **Professor J. Maiti** on the successful conduct of his keynote session on **“Data Analytics for Asset Management”** at ICMIAM-2025 workshop organize at Berwick Campus, Federation University, Melbourne, Australia on 9-12-2025. The session was focused on data-driven approaches, advanced analytics, and practical applications in asset management, providing valuable insights to participants from academia and industry.



Invited Talk on “Variance Adjusted cosine Similarity”

The FEDEX Smart Center seminar series invited **Prof. Jhareswar Maiti** to deliver a talk on **“Variance Adjusted Cosine Similarity (VACS) and Its Applications in Machine Learning,”** on 13th June 2025. The session focused on advanced similarity measures and their applications in machine learning, highlighting improved techniques for data analysis and pattern recognition. The seminar was engaging and witnessed active participation from students, researchers, and faculty.

Faculty Achievement

Publication of two edited Volumes from ICONIEA Conference 2024

The ISE Department, IIT Kharagpur, marked the publication of two edited volumes, **“Operations Research and Data Analytics: Current Trends and Future Perspectives”** and **“Recent Advances in Industrial and Systems Engineering,”** as part of the ICONIEA 2024 conference organized by the department.

Edited by ISE faculty members in collaboration with distinguished academicians, these books compiled selected papers from the conference, highlighting recent research contributions and emerging trends in industrial engineering, operations research, and data analytics. The publications reflected the department’s continued commitment to advancing research and academic excellence.

Lecture Notes on Multidisciplinary Industrial Engineering
Series Editor: J. Paulo Davim

Jhareswar Maiti · Mamata Jenamani ·
Jitendra Kumar Jha · Akhilesh Kumar ·
Sayak Roychowdhury ·
Goutam Sen *Editors*

Operations Research and Data Analytics: Current Trends and Future Perspectives

Selected Papers from International
Conference on Industrial Engineering
and Analytics (ICONIEA) 2024

 Springer

Lecture Notes on Multidisciplinary Industrial Engineering
Series Editor: J. Paulo Davim

Jhareswar Maiti · Mamata Jenamani ·
Sri Krishna Kumar · Balagopal G Menon ·
Anand Jacob Abraham ·
Abhishek Sharma *Editors*

Recent Advances in Industrial and Systems Engineering

Selected Papers from International
Conference on Industrial Engineering
and Analytics (ICONIEA) 2024

 Springer

Guest Lecture

Lecture on "Optimization, AI & ML in Indian Railways"

Guest Lecture



Dr. Rajnish Kumar
General Manager, CRIS

The ISE Department hosted a guest lecture by Dr. Rajnish Kumar, General Manager, CRIS, on **"Optimization, AI & ML in Indian Railways"** on 6th November 2025 at ISE Seminar Room.

The session provided valuable insights into the application of optimization techniques, artificial intelligence, and machine learning in enhancing railway operations. Key takeaways included improving scheduling efficiency, predictive maintenance, and data-driven decision-making in large-scale transport systems. The lecture was well attended by students and faculty.

Lecture on "Improving the Logistics in an Oil Refinery"

Guest Lecture

The ISE Department hosted a guest lecture on **"Improving the Logistics in an Oil Refinery"** delivered by Dr. M. Bhasi, Senior Professor (Retired), School of Management Studies, CUSAT on 18th March 2025 at ISE Seminar Room. The talk highlighted key strategies for optimizing refinery logistics, including efficient supply chain coordination, inventory management, and transportation planning. It also explored the role of digital technologies and data analytics in enhancing operational efficiency, reducing costs, and ensuring timely delivery.



Dr. M. Bhasi
Senior Professor (Retired)

Departmental Activity

Swachhotsav

Swachhata Oath-taking Ceremony for the rollout of the 'Swachhata Hi Sewa' Campaign 2025 on the theme of 'Swachhotsav' in our Department of Industrial and Systems Engineering, IIT Kharagpur.

Departmental Activity



Departmental Activity

Swachhata Oath Ceremony



Student Spotlight

INFORMS 2025

Student Spotlight

The Department of Industrial and Systems Engineering, Indian Institute of Technology, Kharagpur, is proud to congratulate our PhD scholar **Mr. Koushik Mondal**, under the guidance of **Prof Balagopal G. Menon**, on his selection as a Navigator for the **INFORMS Annual Meeting 2025** in Atlanta, USA.

This is a significant achievement and a testament to Koushik's commitment to operations research, leadership, and community service. As a Navigator, he played a vital role in welcoming attendees, guiding participants, and helping create an inclusive and engaging conference experience for thousands of professionals and researchers from around the world. His responsibilities include serving as an ambassador at key events like the New Member Breakfast, writing recaps of

major plenary sessions for INFORMS publications, and representing the vibrant spirit of the OR/MS community.

Learn more about Koushik's role and journey:

🔗 His announcement post: <https://lnkd.in/dM38dUsj>

📺 Introductory video: <https://lnkd.in/dXqAG-vP>

Wishing Koushik continued success in his future.



Koushik Mondal

Student Spotlight

Student Spotlight

INFORMS 2025



KARA COMBS

Air Force
Research Lab



**HIMADRI SEN
GUPTA**

University of
Oklahoma



MAX JI

Penn State
University



**MEHRDAD
MOHAMMADI**

Auburn University



**KOUSHIK
MONDAL**

Indian Institute of
Technology,
Kharagpur



**ALICE
NANYANZI**

University of
Oklahoma



**VIVIAN
NWADIARU**

University of
Massachusetts
Amherst



**PAULA
PENAGOS**

University of
Missouri-St. Louis



**THIAGO
SERRA**

University of Iowa



**JINGJING
WENG**

Temple University



CHEN YE

University of
Cambridge, UK

Student Spotlight

Student Spotlight

Student Spotlight

Small Industries Development Bank of India – DIA Initiative



**Akshat Agarwal
&
Kanishk Raj Choudhary**

ISE-IIT Kharagpur proudly congratulates **Prof. Abhishek Sharma** and our undergraduate students, **Mr. Akshat Agarwal** and **Mr. Kanishk Raj Choudhary**, for delivering an invited session on “Increasing MSME Productivity through Data-Driven Capacity Planning and Inventory Management Techniques.” The session was conducted as part of a workshop organized under the Small Industries Development Bank of India–DIA initiative in collaboration with KPMG at NOCCI Business Park, Balasore, on 7th November 2025

Prof. Sharma delivered an insightful talk highlighting how data-driven decision models can enhance productivity and operational efficiency in MSMEs. Complementing the session, Mr. Agarwal and Mr. Choudhary demonstrated a logistics and freight management application developed by them, showcasing practical implementation of capacity planning and inventory optimization techniques.



Student Spotlight

Student Spotlight

Publication Watch

Below is the list of publications appeared in journals and conference proceedings from the Department of ISE in 2024-2025 (as of July to December 2025).

1. Patra, T., & Jha, J. K. Prepositioning of Relief Supplies Jointly by a Risk-Averse Humanitarian Organisation and Risk-Neutral Suppliers Through an Option Contract. Available at SSRN 4804014.
2. Paramanik, A. R., & Mahanty, B. (2025). A collaborative circular supply chain network design framework for implementing individual producer responsibility under uncertainty. *Transportation Research Part E: Logistics and Transportation Review*, 203, 104332.
3. Kumar, G., Tanvir, O., Kumar, A., & Goswami, M. (2025). Optimal drone deployment for cost-effective and sustainable last-mile delivery operations. *International Transactions in Operational Research*, 32(6), 3259-3295.
4. Sen, S., Bagchi, S., & Ray, S. (2025). Biogeographical network analysis of the Late Triassic dinosaurs and new insights on their geodispersal routes. *Gondwana Research*, 144, 167-180.
5. Dey, A., & Jenamani, M. (2025). A framework for analyzing consumer satisfaction using deep learning and expectation–confirmation theory: with illustration of refurbished laptops. *International Journal of Data Science and Analytics*, 20(3), 2811-2831.
6. Haider, I., & Sen, G. (2025). Constraint satisfaction approach in dynamic aircraft schedule recovery problem with user preferences. *Computers & Industrial Engineering*, 111194.
7. Sen, S., Bagchi, S., & Ray, S. (2025). Biogeographical network analysis of the Late Triassic dinosaurs and new insights on their geodispersal routes. *Gondwana Research*, 144, 167-180.
8. Paramanik, A. R., & Mahanty, B. (2025). Designing a Circular Tire Supply Chain Network in the Context of Extended Producer Responsibility. *IFAC-PapersOnLine*, 59(10), 566-571.

Publication Watch

9. Rajashekar, K., Garg, A., M. Baswade, A., & Sidhanta, S. (2025). Optimizing Drone Deployment for Maximized User Connectivity in Areas of Interest Via Deep Reinforcement Learning. *Journal of Network and Systems Management*, 33(3), 49.
10. Shunmugesh, K., Paul, B., Sarker, B., & Chakraborty, S. (2025). Parametric study and multi-objective optimization of milling of CFRP composite laminates. *International Journal on Interactive Design and Manufacturing (IJIDeM)*, 19(7), 5239-5254.
11. Kushwaha, D. K., & Sen, G. (2025). An integrated modeling approach for multi-class individual crew scheduling in demand channels. *Computers & Industrial Engineering*, 111168.
12. Saviour, C. M., Senapati, R., Mahanty, B., & Gupta, S. (2025). Optimal design of a functionally graded porous uncemented acetabular component: a Kriging model-based computational framework. *Structural and Multidisciplinary Optimization*, 68(6), 117.
13. Kushwaha, D. K., & Sen, G. (2025). Decomposition based approach for multi-trip helicopter routing and scheduling problem in last-mile relief distribution and rescue operations. *Operational Research*, 25(2), 32.
14. Sarker, B., Barman, A., Garg, A., & Maiti, J. (2025). Natural language processing-based ensemble technique to predict potential accident severity. *International Journal of System Assurance Engineering and Management*, 1-17.
15. Sarkar, P., Khanapuri, V. B., & Tiwari, M. K. (2025). Integration of prediction and optimization for smart stock portfolio selection. *European Journal of Operational Research*, 321(1), 243-256.
16. Sarkar, P., Khanapuri, V. B., & Tiwari, M. K. (2025). Accelerating the stabilized column generation using machine learning. *Computers & Industrial Engineering*, 200, 110837.
17. Sarkar, P., Khanapuri, V. B., & Tiwari, M. K. (2025). Integrating machine learning with dynamic multi-objective optimization for real-time decision-making. *Information Sciences*, 690, 121524.

Publication Watch

18. Pramanik, S., Maiti, J., & Maitra, B. (2025). Patterns of fatal road crashes in different road types: applying association rules mining in police reported crash data. *International Journal of Injury Control and Safety Promotion*, 1-10.
19. Ghosh, T., Rasheed, R. A., Singh, S. K., Jenamani, M., & Routray, A. (2025, April). Structural Similarity-Aware Cross-domain Transformer for Improved Seismic Fault Detection. In *ICASSP 2025-2025 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)* (pp. 1-5). IEEE.
20. Nair, R. B., Abraham, A., Kumar, K. R., & Sridharan, R. (2025). Profitability analysis of two rival dual channel supply chains following refund policy adoption. *OPSEARCH*, 1-32.
21. Nair, R. B., Abraham, A., Kumar, K. R., & Sridharan, R. (2025). Profitability analysis of two rival dual channel supply chains following refund policy adoption. *OPSEARCH*, 1-32.
22. Gupta, S., Maiti, J., & Kumar, A. (2025). Prognostic modeling of Li-ion battery using convolutional long short term memory (Convo-LSTM). *International Journal of System Assurance Engineering and Management*, 1-16.
23. Mohanta, P. R., & Mahanty, B. (2025). An empirical investigation into the factors influencing the upgrading of the Indian manufacturing MSMEs to Industry 4.0. *Technology Analysis & Strategic Management*, 1-17.
24. Dey, A., & Jenamani, M. (2025). A framework for analyzing consumer satisfaction using deep learning and expectation–confirmation theory: with illustration of refurbished laptops. *International Journal of Data Science and Analytics*, 20(3), 2811-2831.
25. Dash, R., Sagar, K. G., & Jenamani, M. (2025, January). A Robust Framework for Online Fault Detection in Environmental Monitoring Using Pretrained Probabilistic Models. In *2025 17th International Conference on COMmunication Systems and NETworks (COMSNETS)* (pp. 397-404). IEEE.

Publication Watch

26. Badajena, H., Majhi, S., Chakraborty, B., Jenamani, M., Routray, A., & Dutta, R. (2025, April). Digital Twin-Driven Bearing-Fault Detection in Induction Motor and Drives using Graph Sampling and Aggregation Network. In ICASSP 2025-2025 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP) (pp. 1-5). IEEE.
27. Ghatak, S. K., & Mahanty, B. (2025). Impact of team-composition and project-characteristics on Individual-knowledge growth and performance of onsite-offshore distributed software teams. Knowledge Management Research & Practice, 23(2), 160-176.

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