



# Industrial and Systems Engineering

IIT Kharagpur



## VISHLESHAN

### 2021

Doctoral Colloquium & Research Scholars' Day

Jointly organized by Department of Industrial and Systems Engineering, IIT  
Kharagpur & IISE student chapter, IIT Kharagpur(#660)





# ISE

Industrial  
and Systems  
Engineering

IIT Kharagpur

## About

The Department of Industrial and Systems Engineering (I&SE) was established in 1973 as Industrial Management Centre. It was later elevated to a full fledged department in the year 1983. The department, for the last three decades, has been instrumental in imparting training and extending frontiers of knowledge in the field of Industrial Engineering and Management through its well established undergraduate, post graduate and research programs, sponsored projects and industrial consultancy work, short term courses and continuing education programs. The department offers (i) B.Tech (4-year) in Industrial Engineering, (ii) Dual Degree (5-year) - B.Tech. in Industrial Engineering and M.Tech in Industrial Engineering and Management, (iii) Dual Degree (5-year) - B.Tech in Manufacturing Science & Engineering and M.Tech in Industrial Engineering and Management, (iv) M.Tech (2-year) in Industrial Engineering and Management, (v) Master of Science (MS) and (vi) Doctor of Philosophy (PhD) programmes. In addition, ISE coordinates the Dual Degree (5-year) programme on B.Tech in Engineering Product Design and Manufacturing and M.Tech in Design and Quality Engineering, with mechanical and industrial electronics verticals Today, the department is well known across the nation for its excellent research and consultancy potential and capability in the

### Vision

Department of Industrial and Systems Engineering embodies to act as a repository of knowledge and practices covering the broad domain of Industrial Engineering and management sciences and to nurture the students by way of teaching, research and industrial partnership.

### Mission

Achieve global excellence and create local impact in research and teaching.

Design and develop contemporary courses in line with the new developments in academics internationally as well as tailor-made for the companies to meet their emerging requirements.

Enhance the analytical skill and problem solving ability of the students through innovative design and conduct of teaching, laboratory experiments, case studies, seminars and colloquium.

Pursue research in the emerging fields of industrial engineering and management sciences through enhancing core competence internally as well as through collaboration with internationally renowned academic institutions worldwide.

Interact with industries through consultancy services for real life problem solving



# INSTITUTE OF **INDUSTRIAL & SYSTEMS** ENGINEERS

## About

### Student Chapter, IIT Kharagpur (#660)

Industrial and systems engineers make things better in any industry — from automobile manufacturing and aerospace, to healthcare, forestry, finance, leisure, and education. The Institute of Industrial and Systems Engineers, founded in 1948, helps its members improve complex organizations around the world and across industries. Throughout their careers, members turn to IISE for tools and connections that provide an integrated and systemic perspective to business challenges. Solving complex problems is our common objective..

IISE, the world's largest professional society dedicated solely to the support of the profession, is an international, nonprofit association that provides leadership for the application, education, training, research, and development of industrial and systems engineering. Currently the office bearers of IISE students chapter IIT Kharagpur are

*President: Mr. Avishek Pandey*

*Vice President: Mr. Satchidananda Tripathy*

*Secretary: Ms. Kriti Karmakar*

*Treasure: Mr. Ashok Kumar Gaula*





# Lab facilities

## E-business Lab

Currently this lab is equipped with 10 Desktops, 1 network printer, 1 high performance computing cluster as well as Python (version 2.7.3.4), Gephi, R(version 2.0.1), CPLEX, Lingo, MATLAB (version 2014a, 2014b), Wolfram Mathematica Kernel 10, SAS Deployment manager 9.3 etc softwares.

Our research team consist of professors from Department of Industrial and Systems Engineering, Department of Mechanical Engineering, Department of Computer Science Engineering and Center of Reliability Engineering. 7 Ph.D. and 4 M.S. scholars are currently working in this lab.

Research focus of this lab is Logistics and Supply Chain Management, Recommender Systems, Social Network Analysis, Cloud Manufacturing, Customer Behavior Analysis, Sentiment analysis and its applications etc.

## Work System Design and Ergonomics Lab

The main measuring instruments installed and used are: bicycle ergometer, treadmill, eye-hand coordination tester, digital flicker, depth perception meter, threading tester, cord binding tester, lux meter, anesthetic gas monitor, precision sound level meter, human vibration measurement unit, oxylog data logger, kata thermometer, rating films, martin type anthropometer, and thermal comfort data logger.

The experiments and exercises developed are related to a number of aspects and issues, such as principles of method study, measurement and analysis of work and recovery cycles for jobs, anthropometry and postural analysis, use of rating films of jobs, time study of assembly and machining jobs, application of therbligs and MTM for assembly jobs, measurement and analysis of ergonomic variables, work illumination design.



## Operations Research and Data Science Lab



This lab is well equipped with 59 desktops as well as Arena for Discrete event Simulation, SPSS and SYSTAT for Statistical Analysis, and Powersim for Continuous Simulation etc software.

The laboratory courses such as information systems lab, operations research lab, simulation lab, optimization and heuristic methods, computational lab and information systems project are conducted in this laboratory.

## Quality Design and Control Laboratory

The main measuring instruments and lab setups installed and used for the following experiments are: physical production system simulator manual and automated and push/kanban-based, acceptance sampling simulator, surface roughness-meter, digital multimeter, digital weighing machine, digital micrometer and vernier caliper.

The experiments and exercises developed are related to a number of aspects and issues, such as measurement and analysis of quality characteristics, construction and interpretation of attribute and variable control charts, simulation and analysis of work flow system for push and pull dispatching rules under varied conditions of quality (rework and scrap) at stage and final outputs, simulation studies on acceptance sampling simulator, process capability study, acceptance sampling plans for variables and reliability and life testing.



## Safety Analytics and Virtual Reality (SAVR) Lab



In order to carry out research activities as per the world standard, the SAVR laboratory is equipped with Network Server, High End Workstations, Intersense Tracking System, Head Trackers, Surround Sound System, Robotic Total Station(RTS) etc hardwares as well as R, SAS, SPSS, MINITAB, MATLAB, Mathematica, CPLEX, QUEST, Solidworks, 3DSSPP, Autodesk, Unreal Engine, etc softwares.

Our research team consist of professor from various departments, research scholar, M.Tech, B.Tech, M.S and project staffs.

Our research team works with collaboration with different industries and organization like TATA Steel Limited, DRDO, Vizag Steel Plant, Coal India.

Main research focus of this group is Safety & Health namely Safety Analytics, Health Analytics, Engineering Ergonomics, and Virtual Reality applications.

## Logistics & Supply Chain Lab

Current research focus of this lab is Modelling of Indian food supply chain, Logistics in food supply chain, Food grain distribution planning in India, Healthcare service supply chain, Reverse logistics with green cap.

Currently This lab is equipped with 15 desktops, 1 network printer as well as CPLEX v 12.5, MATLAB, LINGO, SAS 9.3 etc. software.

At present 5 Ph.D. students are working in this lab.





# Objective

The colloquium aims at providing a forum for researchers and young scientists, from academia and industry on various themes in Industrial and Systems Engineering. It will provide the participants an opportunity to discuss their dissertation research with other reputed academicians and doctrol students to develop an insight on the ongoing trends in Industrial Engineering. The participants get a platform where they can interact with the research scholars of the department and can discuss the problems they are facing in their research. They also have an oppurtunity to discuss their ideas with the speakers from the industry. The colloquium also provides industries a platform to discuss recent oppurtunities for research in their field.



# Sponsorship

Over the years, the Department of ISE, IIT Kharagpur, has been engaged in education and research in the areas of Occupational Health and Safety, Data Analytics, SCM and E-Business, and Engineering Product Design and Quality. The department is in constant touch with several resource persons from other bench-marked educational institutes and other organizations in its constant endeavor to provide quality education and research in these areas. By organizing such a programme, the faculty members and researchers of the department will be able to exchange, disseminate knowledge and expertise with a galaxy of renowned industries, researchers and academics.

In this context, we seek your support in the form of sponsoring certain events of the colloquium.



## Event Sponsors Vishleshan 2020



## Sponsor levels and benefits

### Platinum sponsor

- ❖ Sponsor names will be a part of the event name.
- ❖ Name and logo on printed accessories.
- ❖ Advertisement or product placement in all social media and website pages of the event.
- ❖ Dedicated 15 minute slot to present their portfolio online during the event.
- ❖ Short video (30 Sec) or poster display between the event.

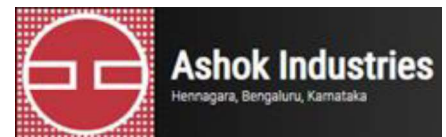
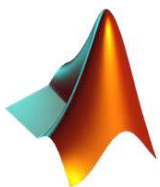
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- ❖ Name and logo on printed accessories.
- ❖ Advertisement or product placement in all social media and website pages of the event.
- ❖ Short video (30 Sec) or poster display between the event.

### Silver sponsor

- ❖ Advertisement or product placement in all social media and website pages of the event.

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## IMPORTANT DATES

27<sup>th</sup> and 28<sup>th</sup> February

2021 – Research

Scholars' day

## PARTICIPANTS

Participants from various institutes and organizations with areas of interest in any of the provided themes.



## COLLOQUIUM THEMES

- Occupational safety
- Healthcare
- Supply Chain Management
- Data analytics
- Engineering Product Design
- Quality control



## CONTACT

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Prof. in charge, IISE society  
Prof. Sri Krishna Kumar

Research scholar coordinator  
Prof. Mamta Jenamani





**ISE**

Industrial and Systems Engineering Department

## Who we are

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## Conveners

**Head of Department**

Prof. Sarada Prasad Sarmah

**Prof. In Charge, IISE society**

Prof. Sri Krishna Kumar

**Research scholar coordinator**

Prof. Mamta Jenamani

