

About IIT Kharagpur



Kharagpur - a dusty town tucked away in the eastern corner of India, famous until 1950 as home to the longest railway platform in the world - became the nursery where the seed of the IIT system was planted in 1951. IIT Kharagpur started its journey in the old Hijli Detention Camp in Eastern India, where some of the country's great freedom fighters toiled and sacrificed their lives for India's independence. Spurred by the success of IIT Kharagpur, four younger IITs sprouted around the country in the two following decades, and from these five came thousands of IITians, the brand ambassadors of modern India. It was the success of this one institution at Kharagpur that wrote India's technological odyssey.

The Institute takes pride in its relentless effort to provide the best platform for both education as well as research in the areas of science and technology, infrastructure designs, entrepreneurship, law, management, and medical science and technology. IITKGP is not just the place to study technology, it is the place where students are taught to dream about the future of technology and beam across disciplines, making differences enough to change the world.

Program Features/ Structure

Classroom lectures – 50%
Numerical/ Problem solving, Hands-on training in CPLEX software – 30%
Mini-project on an industry use case- 20%

Program Schedule and Venue

5 days, 6 – 10 July
2020 (9:30 AM – 5:30 PM)
IIT Kharagpur –
Department of Industrial & Systems Engineering

Program Fee

Nil for AICTE-QIP sponsored participants
For others - INR 23,600/- (Twenty three thousand six hundred) including GST @18% per participant

Who will benefit (Eligibility)

you are a faculty or working professionals in Industrial Engineering, Mechanical Engineering, Computer Science & Engineering, Information Technology, Management and allied areas

Last day of Registration

26
June 2020

Accommodation

Accommodation will be provided to the AICTE-QIP sponsored participants at the campus Guesthouse. For other participants, the same will be provided on chargeable basis as per rule.

How to Apply

Use the link: <https://erp.iitkgp.ac.in/CEP/courses.htm> to apply ONLINE.



Payment if applicable is to be done **ONLINE** after getting short listed for the program.

Contact Us

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AICTE QIP

QUALITY IMPROVEMENT PROGRAMME

Indian Institute of Technology Kharagpur
2020

Decision Modelling through CPLEX

5 days

6 – 10 July 2020

Introduction / Overview

Decision modelling, also known as Operations Research (OR), is a core course in BE/BTech programs in Mechanical Engineering, Industrial/Production Engineering, Economics and Management. The content is also useful for Computer Sc. & Engineering, IT, Electronics and Communication Engineering, Electrical Engineering and allied disciplines. The application of OR is commonly observed in supply chain and transportation logistics, where cost cutting and timeliness are emphasized by optimal use of resources. However, the solution methods of OR models are often hard to code and implement. In this context, IBM has developed the state-of-the-art CPLEX software to solve optimization problems quickly and efficiently. The course is designed to provide hands-on experience in CPLEX and appreciate the power of optimization to solve complex problems of industry.

Program Objectives

The course will mainly focus on linear optimization problems, theoretical concepts, solution algorithms and hands-on training of the popular solver IBM ILOG CPLEX. The topics will include linear programming and modelling examples, graphical method, simplex method, duality, dual simplex method, transportation and assignment problem, integer programming and modelling examples, branch-and-bound and travelling salesman problem. Two lab modules will include live demonstrations and assignments in CPLEX solver. One mini-project module is designed to familiarize the participants with an industry use case. At the end of the course, the participants will be equipped with the skills of optimization modelling and use of CPLEX software to solve real-life optimization problems.

What you will learn

Program Content

Introduction to Linear Programming

Modelling Examples

Graphical Method

Algebra of Simplex Method and Tabular

Form

Two-phase and Big M Methods

Revised Simplex Method

Duality and its Applications

Dual Simplex Method

Sensitivity Analysis

Transportation and Assignment Problem

Integer Programming and Modelling

Examples

Branch-and-Bound Method

Introduction to CPLEX and OPL

Lab Sessions

A CPLEX based mini-project on an industry use case

About the Faculty

Principal Coordinator

Dr. Goutam Sen

He is an Assistant Professor in the Department of Industrial & Systems Engineering at Indian Institute of Technology Kharagpur. He received his PhD in network optimization jointly from Industrial Engineering and Operations Research, IIT Bombay, India, and from School of Information Technology, Monash University, Melbourne, Australia. His research area includes application of Integer Programming to solve transportation and network design problems in supply chain and logistics. His recent work on a real-life scheduling problem at Howrah station has earned appreciation from the railway authority and appeared in the prestigious INFORMS Journal of Applied Analytics (formerly Interfaces). He closely interacts with officials from public sector, viz. Indian Railway, Air India, ISRO, DRDO and Police on a variety of optimization problems.

Co-Coordinator

Dr. Jitendra Kumar Jha

He is an Associate Professor in the Department of Industrial & Systems Engineering at Indian Institute of Technology (IIT) Kharagpur. He obtained his PhD from IIT Kanpur. He has received several scholarships and awards from DRPG IIT Kanpur, BITSAA of North America, SJ Jindal Trust New Delhi, etc. His main areas of teaching and research include Operations Research, Statistical Decision Modelling, Facility Planning, Supply Chain and Logistics planning, and Inventory Control. He published/presented more than forty five papers in international journals and conferences, and his publications appeared in the reputed journals like Journal of the Operational Research Society, Journal of Manufacturing Systems, Applied Mathematical Modelling, Computers & Industrial Engineering, International Journal of Production Research, and others. He is serving as an editorial board member of International Journal of Industrial Engineering: Theory, Applications and Practice. He has been associated with the several projects of the various sponsoring agencies like Coal India, NLC India, and MHRD.