



26 - 28 July 2023

3 Days hands on workshop (**offline**) on

# Design of Experiments

In collaboration with



## OVERVIEW

This hands-on workshop aims to enhance the awareness and application of Design of Experiments principles in both academic and industrial contexts. It combines theoretical knowledge with practical application using the JMP Statistical Discovery software.



### Hands-on Workshop

This program includes hands-on exercises. Participating faculty and research scholars from academia will be provided with a **complimentary JMP** software for **one year**.

Participants from Industry and research organizations need to download and activate a free trial of JMP software from [www.jmp.com/try](http://www.jmp.com/try). Once activated, this trial will last for 30 days. We recommend you download and activate your free trial just one week prior to the start of the workshop.

## BENEFITS

This workshop will equip you with a sound theoretical understanding of the Design of Experiments (DoE), complemented by hands-on exercises using JMP's Statistical Discovery software to reinforce your learning.

1. **A Supportive Learning Experience:** The workshop, led by Prof. Kannan from IIT Madras in collaboration with JMP's academic facilitators, will provide immediate assistance and respond to your queries. Both the theory and practice of DoE will be explained, demonstrated with well-chosen examples and case studies, and then implemented by participants in the JMP software's environment.
2. **A Powerful Addition to Your CV:** This workshop offers the opportunity to develop a solid theoretical foundation in DoE and gain valuable hands-on experience with JMP's statistical discovery software. Those who attend this workshop will receive a certificate, serving as evidence of your learning.
3. **Add Value to Your Work:** The application of DoE principles may expedite your R&D process and scientifically aid in identification of key variables and enable critical resource decisions, thereby saving time and money, and providing a competitive edge in the market.
4. **Use and Communicate Data:** Learn new ways to visualize experimental data, uncover fresh insights, and enhance the impact of your presentations and research communications with key stakeholders.
5. **Teach and Research Using DoE:** Whether you are research scholar or an instructor, this workshop will enable you to effectively embed scientific experimentation using DoE with JMP into your curriculum.

## WORKSHOP CONTENTS

- **Introduction to DOE:** Strategy of Experimentation, Motivations to use DOE, Explanation of Terminologies in DOE.
- **DOE Essentials:** Defining the Problem and Objectives, Identifying the Responses, Recognizing the Factors and Factor Levels, Accommodating Constraints, Preparing to Conduct Experiments.
- **Factorial Experiments:** Factorial Design of Experiments and analysing non-replicated as well as replicated Full Factorial Designs.
- **Screening Experiments:** Screening for Important Effects, Exploring Fractional Factorial Designs.
- **Response Surface Methodology:** Introduction, Sequential Experimentation, Analysis, Optimization, Creation of Custom Response Surface Designs.
- **Mixture/Formulation Experiments:** Designing Experiments for Formulations, Constrained Formulations, Formulations with Process Variables.
- **Modern Experimental Designs:** Custom Design, Definitive Screening Design.
- **Prediction, Simulation, and Optimization.**

## WHO SHOULD ATTEND

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- **Academicians** - Instructors, researchers, and postgrads aiming to do more effective, rapid, and economical experimental research, particularly in Mechanical, Chemical, Material science, Pharmaceutical, Bio/Life Sciences, and related domains, seeking to boost their experimental awareness, and comprehension of experimental design methodologies, with a renowned companion statistical software.
- **Industrial Professionals** - Engineers, scientists, and R&D professionals who are involved in the design and analysis of experiments in the Chemical Process and related industries. This workshop will provide valuable insights into optimizing experimental design for cost-effectiveness through minimization of resources and effort.

## INSTRUCTOR

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**Dr Kannan** is a professor at Indian Institute of Technology, Madras and has been involved in teaching and research for more than 25 years. He has been teaching Statistical Analysis and Design of Experiments course to students and research scholars across many Departments (Chemical, Biotech, Mechanical, Civil, Chemistry, Engineering Design, etc.) for more than 10 years at IITM and has delivered short-term courses and workshops in India on the subject. The concepts of Design of Experiments have been extensively applied in his research as well. He is also known for his NPTEL course on 'Statistics for Experimentalists'. Dr. Kannan will be assisted by Muralidhara & Chandramouli from JMP.

## REGISTRATION

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**Fee:** Academia INR 12000/- . Research labs and Industries INR 18000/-.

**Venue:** Indian Institute of Technology, Madras (**offline**)

**Participants are requested to make their own arrangements for accommodation & travel.**

**Limited Seats, please register using the link below before July 20, 2023.**

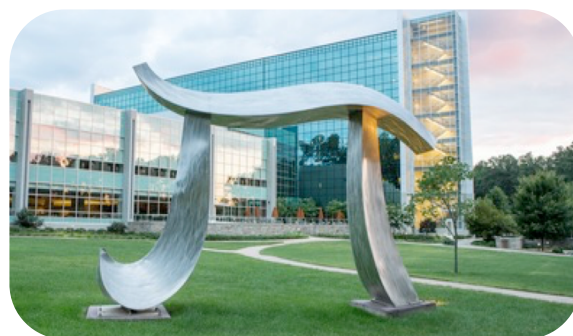
<https://elearn.nptel.ac.in/DOE2023/>

## ABOUT

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**IIT Madras** (Indian Institute of Technology, Madras), a beacon of academic excellence in India, was established in 1959. Nestled in a lush, expansive campus in Chennai, it offers diverse courses from engineering to humanities. Renowned faculty, modern facilities, and a vibrant student culture foster spontaneous intellectual growth. Underpinning its ethos is a strong focus on innovation and entrepreneurship. Its alumni, making strides in science and industry, underscore IITM's Madras's global impact.



Since 1989, **JMP**, (a SAS company) has been transforming data analytics through its interactive visualization and robust statistics, leading to insight-driven advancements. Scientists and engineers' harness JMP to propel green-energy breakthroughs, expedite cancer therapies, and build high-tech space probes. J-M-P, pronounced 'jump,' embodies a leap in innovation and interactivity.