

Management Development Programme



Design of Experiments with MINITAB

December 11-13, 2017

MDI Campus, Gurugram



MDI
GURGAON

Management
Development
Institute

Background

Today, the products, processes and systems have become extremely complex and as a consequence the days of plucking the low hanging fruits are over. Therefore, a simple common sense approach to experimentation may not suffice. A systematic scientific approach towards planning, and executing a set of experiments, collection of appropriate data and analysis thereof are now prerequisites for faster and effective knowledge acquisition.

Design of Experiments is a statistical methodology to test several theories or examine the effect of several factors in developing a new product/process and solving chronic industrial problem. The methodology has found wide application in various industries like chemical, pharmaceutical, engineering and many other industries. This program is designed to develop the skill set required for problem solving and process performance optimization through designing, executing and analyzing industrial experiments. Minitab 17, a statistical software package, will be used in the class to layout the experiment and analyze the data to strive for an optimal solution. At the end of the class, the student will understand the theory of DOE and have the capability of running and analyzing an experiment in MINITAB 17.

Objectives

- To understand the industry application of DOE approaches in optimizing solutions (vital few Vs trivial many variables)
- To introduce the basic concepts of DOE: factor, response, level, randomization, replication, blocking
- To understand the applications of full and fractional factorial design in industry.
- To learn and practice data analysis using MINITAB 17
- To learn how to design, run, analyse, interpret and present the results from full and fractional factorial design using MINITAB 17.
- To understand the use of Orthogonal Arrays (Taguchi Methods) to design and run experiments
- To determine main effect and interaction effect of factors on response.
- To learn how to optimize the key variable using MINITAB's Response Optimizer.

Contents

- Introduction to Design of Experiment (DOE)
- Basics of Statistics for DOE: Creating and using confidence intervals, Power & Sample Size, t- test, one way & two way analysis of variance (Anova), variance test to show evidence of a process change or improvement
- Overview of MINITAB 17: file structure, tool bars, basic graph summaries, descriptive statistics
- Classical Design and analysis of Experiments: Full Factorial and Fractional Factorial design
- Using MINITAB to create and analyse Full and Fractional Factorial design.
- Taguchi methods: Design experiments using Orthogonal Arrays (OA) & Signal to Noise Ratio analysis
- Using Orthogonal Arrays to design and run experiments.
- Interpret tabular and graphical results.
- Determine main effect and interaction effect.
- Choice of design based on cost and benefits.

Faculty

Core faculty of MDI and experts in this field will facilitate discussions and share their experience.

Target Audience

Senior Managers/Executives/Scientist of R&D / Manufacturing / Laboratory function who is routinely involved in designing a new product/process and solving industrial problems.

Venue And Duration

The programme is scheduled during December 11-13, 2017 on residential basis at MDI Campus, Mehrauli Road, Sukhrali, Gurugram. Accommodation for participants would be available at MDI campus from the afternoon of December 10, 2017 to the forenoon of December 14, 2017.

Discount Policy

With a view to our long term relationship with your esteemed organization, we are pleased to introduce the discount policy in a particular programme. The discount will be observed in the following conditions:

1. 10% Discount against 3-5 nominations
2. 20% Discount against more than 5 nominations

Registration & Fees

Participants should be nominated by their organizations. The enclosed nomination form should be completed and returned with all the details.

The fee of the program is **Rs. 36,000/- (Rupees Thirty Six Thousand only)** per participant which includes professional fee and all charges for lodging and boarding and supply of course materials. **GST as applicable will be charged extra in addition to the programme fee.** Payment should be made by a crossed Demand Draft/Cheque/NEFT/RTGS in favour of "Management Development Institute, Gurugram (Haryana)", and send to the Chief Administrative Officer (Programmes), Management Development Institute, Sukhrali, Mehrauli Road, Sector-17, Gurugram 122001, Haryana, INDIA.

Important Dates

The last date for receipt of nominations is December 04, 2017. The last date for withdrawal of nominations is December 06, 2017. Any withdrawal received after this date will be subject to deduction as per the Institute's rules. However, substitution may be permitted.

Nominating organizations are advised to await confirmation of acceptance of nominations(s) before sending the participants to the programme venue.

Enquiry

For any Additional information / enquiry, please write to:

Chief Administrative Officer (Programmes),

Management Development Institute,

Post Box No. 60, MDI Campus, Mehrauli Road, Sector – 17, Gurugram – 122 007, Haryana, INDIA

E-mail : caomdp@mdi.ac.in

Tel No. : +91-124-4560004

Campus

Direct Tel : +91-124-4560004, 4560534, 4560550

Tel Nos. : +91-124-4560000, 2340173

Fax Nos. : +91-124-4560005

E-mail : caomdp@mdi.ac.in

Website : <http://www.mdi.ac.in>

Faculty Profile

Dr. Anupama Prashar

Assistant Professor, Operations Management

LSS Master Black Belt (ISI)

Email : anupama.prashar@mdi.ac.in

Phone : +91-124-4560292

A certified Lean Six Sigma Master Black belt, Dr. Anupama Prashar combines her cross-industry project-consulting exposure with state-of-the-art academic research to add value to the discussions in her teaching and consulting assignments.

She is presently a Professor of Quality Management in the area of Operations Management at Management Development Institute, Gurugram.

A university rank holder in her graduation and post-graduation, Dr. Prashar holds Ph.D. from School of Management Studies, Punjabi University. She received her Master's degree in Business Management and Bachelor in Industrial Engineering from Punjab University.

Teaching & Consulting Experience

Dr. Prashar has more than 14 years of experience across training, consulting and research. Prior to joining MDI, she has taught at University Business School, Punjab University, IILM Institute of Business Management and Punjab Technical University. She has taken up many International teaching assignments including Georgian College, Canada, Kathmandu University, Nepal. Here teaching interest include Operational Excellence frameworks, Business Intelligence & Data Analytics, Research Methodology and Service Operations Management.

As a Certified Lean Six Sigma Master Black Belt, she regularly delivers Lean Six Sigma trainings programs organized by industrial forums such as PHDCCI, CII and FICCI and also conducts MDPs (on-campus and in-company training programs).

She has coached and mentored more than 20 Lean Six Sigma projects to the small and medium scale companies from manufacturing, service to public sectors. She also conducts workshops on statistical software such as SPSS, MINITAB and Excel and has conducted training sessions in on-campus and in-company MDPs on following topics:

Six Sigma DMAIC,
Lean Manufacturing VSM,
Design of Experiments (DOE),
Multivariate Data Analytics for Business,
Benchmarking,
Total Quality Management,
Value Engineering.

Academic Research

Dr. Prashar has published research articles in coveted international journals such as The TQM Journal, International Journal of Quality and Reliability, Production Planning & Control, TQM & Business Excellence, International Journal of Lean Six Sigma, Journal for Education in Business and International Journal of Performance & Productivity Management. She is also serving on the editorial board of journals in the field of operations management.

She has published teaching cases in Richard Ivey Publishing and Case Centre, UK.

She has coauthored books on the subject of Industrial Safety and Environment and Operations Management.

Her research interests include

Total quality management, Process improvement & optimization, Strategic manufacturing and global competitiveness



About MDI

The Management Development Institute (MDI) was established in 1973 with the active support of IFCI following an initial grant received from KFW West Germany. The Institute soon established itself as one of the earliest centers for continuing education in India.

As an endorsement of its front runner position in the field of Post Graduate Education in Management in India, MDI's PGPM (a two-year full time MBA equivalent program) has been awarded "A" Grade by the National Board of Accreditation of All India Council for Technical Education (AICTE). Various surveys have ranked MDI among the top B-schools of the Country. The MDI is the first Indian B-school with Global accreditation AMBA-Association of MBAs, UK. The education programs comprise of two-year full-time PGPM, PGP- HR, PGP-IM, 15-month Executive PGDBM, three-year Executive Management Program, Doctoral level FPM I EFPM, Post Graduate Program in Energy Management, and PG Diploma in Public Policy and Management. In addition to its academic programs, MDI has been a pioneer as well as a market leader in the area of continuing education in management. With over 43 years in this field, MDI conducts nearly 200 weeks of intensive short-term training programs each year, aimed at executives and managers from industry. Over 3000 managers participate in these programs each year. These include open programs, as well as customized organization specific training modules. The approach integrates latest knowledge with best practices through integrated business school activities enabling organizations in pursuit of excellence'.

MDI offers consulting services in the different functional areas of management. The driving force at MDI is a dedicated team of distinguished faculty who has extensive experience and expertise in diverse fields. Over the years, there has been distinctive shift in emphasis from helping design and implement policies, systems and processes in functional domains to cross-functional domains. The institute is recognized by the industry (public and private). Central and State governments, and NGOs and is known for providing quality services to its clients. MDI always strives to provide high quality, cost-effective and timely services to the clients. It has remained contemporary through its primary focus on research, adapting to change and developing innovative strategies to facilitate the process of change in the dynamic business environment. The institute's clients say that it has been able to add value to them by bringing in a strong cross-functional emphasis in their approach to carry out business.

As part of its strong research focus, MDI supports the following research initiatives:

- Centre for Supply Chain Management
- Centre for Excellence in Information Management
- Centre for Entrepreneurship
- Centre for Transformational Leadership
- Centre for Corporate Governance
- Centre for Responsible Business
- Centre for Positive Scholarship

MDI maintains high level of academic excellence in management. It has over 80 full-time faculties who have several years of

experience having worked at senior positions in the industry. The faculty is thus able to deliver a healthy mix of practical insights and academic rigor in the classroom. MDI also has strong links with leading international B-schools. This aids in delivering a globalized management curriculum. As part of the global initiatives, student and faculty exchanges go on regularly. Joint research projects are also undertaken. Above all, MDI has a well developed state-of-the-art infrastructure, which includes a library with a collection of over 60,000 volumes, and online access to international journals, a computer center with over 500 PCs, air conditioned lecture halls and syndicate rooms, besides a host of other recreational facilities.

MDI's International Partners

MDI has active linkages with McGill University Canada, University of Waterloo, Waterloo, School of Public Policy, George Mason University USA, University of Connecticut, USA, Cambridge College, Massachusetts, USA, DeGroote School of Business, McMaster University Canada, Robert H. Smith School of Business, University of Maryland, USA, Marquette University Wisconsin, USA, Bentley College, USA, The University of North Carolina, Kenan-Flagler Business School, Chapel Hill, USA, North Carolina State University Raleigh, North Carolina, USA, ESCP-EAP, France, EOHEC Business School, France, The Institute d'Etudes Politiques de Paris (Sciences-Po), IAE Aix-en Provence, France, Total Professors Association (TPA), Paris, Grenoble Ecole de Management, Grenoble, Bergische Universität Wuppertal, Wuppertal, HHL Leipzig Graduate School of Management, Leipzig, International University in Germany, Bruchsal, European Business School - Oestrich-Winkel, Frankfurt School of Finance & Management, Frankfurt, Vienna University of Eco. & Business Administration, Austria, Copenhagen Business School, Denmark, Aarhus School of Business, Denmark, Solvay Business School, Brussels, The Faculty of Applied Economics, University of Antwerp, Belgium, BI Norwegian School of Management, Norway, Unlversua Carlo Cattaneo. (LIUC), Italy, Bocconi University Milano, Warsaw School of Economics, Poland, Graduate School of Business Economics, Higher School of International Commerce and Finance (WSHiFM), Warsaw, Middlesex University London, UK, School of Management, Asian Institute of Technology, Thailand, Queensland University of Technology Brisbane, University of the Free State, Bloemfontein, University of Otago, Dunedin, Leon Recanati Graduate School of Business Administration, LAHAV Executive Education Centre, Faculty of Management, Tel-Aviv University, Tel-Aviv, Israel, University of Tampere, Finland, Lahore University of Management Sciences (WMS), Pakistan, RSM Erasmus University Rotterdam, Athens University of Economics and Business, Athens, Moscow International Higher Business School "MIRBIS", Moscow, Huazhong University of Science and Technology (RUST), School of Management, China. These linkages operate in the domains of exchange of students, faculty and knowledge. Some executive education programs are co-designed and delivered along with our partners. MDI now has developed a new niche market for foreign institutions in conducting international executive development programs at MDI campus.



MDI
GURGAON

**Management
Development
Institute**

Mehrauli Road, Sukhrali, Gurugram 122001, Haryana (India)
Direct Tel. : (+91-124) 4560004, 4560534, 4560550
Tel No. : (+91-124-4560000, 2340173, Ext. 5534, 5550, 5004
Fax Nos. : +91-124-4560005
E-mail: caomdp@mdi.ac.in, website: www.mdi.ac.in