

Training on Multivariate and Experimental Design approach for process monitoring and quality inspection

October 25-28, 2010

Bangalore, India



Register Now 

CAMO has more than 20 years experience in providing multivariate data analysis software, products and solutions. A recognized name in the chemometrics software domain, CAMO software solutions help clients understand the knowledge hidden inside data.

This integrated course has been designed to give participants a strong foundation in the basics and fundamentals of Multivariate Data Analysis and DoE and their applications in process and quality monitoring. The course combines theoretical studies and practical workshops, ensuring that each participant gets individual focus, and understands the practical uses of MVA & DOE applications in R&D, Product Development, PAT, Production, Quality Control & Assurance and Consumer Insights. Numerous real world data sets will be analyzed during the course.

Why Multivariate Analysis and DoE Training?

Tailored to meet the needs of professionals and students, each course is designed around real-world industry applications of chemometrics and multivariate analytical methods, with intensive, hands-on training using latest software tools.

Carefully selected course exercises and application examples provide students with Theory-to-Skills Building knowledge transfer, enabling them to achieve proficiency in applications development. CAMO training courses are taught by experts in the fields of Multivariate Statistics, Chemometrics, Spectroscopy and Process Analytical Technology Solutions (PAT).

Course participants will learn how to interpret complex data quickly and confidently using most modern multivariate techniques. With a non-mathematical approach, our participants can quickly and safely start using the methods in their own work to optimize, classify or predict products and monitor processes.

Who should participate in this program?

The courses have been designed for individuals:

- ▶ Involved in R&D, process monitoring, product development, process optimization, quality control & inspection
- ▶ Working or likely to work with spectroscopic instruments (NIR, FTIR, UV, UV/VIS, NMR, Raman, Mass Spectroscopy), chromatography instruments (LC, GC) and other sources of multivariate data as part of laboratory, R&D, quality control or production processes
- ▶ Professional engineers and managers involved in manufacturing from Chemical, pharmaceutical drugs and Process development engineers, Process Analytical Technology (PAT), quality assurance and regulatory affairs
- ▶ No prior knowledge of **The Unscrambler®** is required to attend our courses.

Course Details

Multivariate Analysis Level - 1

- ▶ The world is multivariate –Introduction to multivariate data modelling
- ▶ When are multivariate methods useful?
- ▶ Principal Component Analysis (PCA)
- ▶ Multivariate regression:
 - ▶ MLR- Multi Linear Regression
 - ▶ PCR- Principal Component Regression
 - ▶ PLS- Partial Least Squares
- ▶ Relevant data collection
- ▶ Multivariate modelling step by step
- ▶ Pretreatment and scaling
- ▶ Detecting and dealing with outliers
- ▶ Calibration, validation
- ▶ Prediction
- ▶ The different validation methods
- ▶ Basic rules for successful data analysis

Design of Experiments

- ▶ What is Experimental Design?
- ▶ Experimental Design in R&D projects
- ▶ Screening Designs Optimization Designs and their analysis
- ▶ Experimental Design and PCA
- ▶ From screening to optimization
- ▶ Designs for product and process optimization
- ▶ Multivariate Analysis of Data collected on the basis of Experimental Designs

Basic Statistics

- ▶ Exploratory Data Analysis and Descriptive Statistics
- ▶ Hypothesis Testing: parametric and non parametric tests
- ▶ ANOVA
- ▶ Control charts for process monitoring
- ▶ Multivariate charts

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1st Day : 10.00 - 17.00

2nd Day : 09.00 - 17.00

3rd Day : 09.00 - 17.00

4th Day : 09.00 - 17.00

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Suresh Kumar BV

Chemometric Consultant, CAMO Software

Course Instructor

Suresh Kumar, has an M.Sc. in Physical Chemistry. A chemist by profession, Suresh has more than 10 years of experience in the Quality Control, Analytical Research & Development divisions of Food, Pharmaceuticals, Analytical Instruments Manufacturing, with emphasis on multivariate data analysis & calibration. Suresh has acquired hands on experience in operation, calibration and validations of sophisticated analytical instruments such as HPLC, GC, FT-IR, Near Infrared (NIR) and other Spectroscopic and Electro Analytical Techniques. Suresh is familiar with latest Regulations like PAT (Process analytical Technologies – A Sub Group of USFDA) for Complete Process Monitoring Validation methods. He is well-versed with cGMP and cGMP Guidelines. Suresh has specialized in providing training of multivariate data analysis in research and industrial applications.

Ramnendra Mandloi

Consultant, Lean & Six Sigma

Course Instructor

M. Tech from IIT Delhi, Black Belt with over 14 years of industrial experience with large automotive manufacturing organizations which includes execution of process improvement using Quality Management system, Six Sigma, TQM, Automotive Core Tools application i.e. FMEA, SPC, MSA, DOE. He has been involved in training and development of people from basic system tools to six sigma & lean tools for more than 2500 peoples.

He has worked in groups like Tata, Mahindra & Mahindra, Avtec (Formerly Hindustan Motors Ltd., PUP Division), Kirloskar Brothers Ltd.. He has been instrumental in getting TS 16949 for these organizations in record time with the World's Best Certifying Agencies, including holding positions as Management Representative for ISO 9001, 14001, TS16949. He is Certified auditor for TS 16949, Lead auditor for ISO 14001 and certified auditor for CII Exim Award (Business Excellence Model based on TQM model of European Federation of Quality Management).

Industry: ₹ 24,900 + tax | Academic: ₹ 19,920 + tax

Bulk discount of 10% for more than 3 participants from the same organization. 10% discount for existing user license under maintenance.

The course fee includes course material, coffee / tea and lunch. It also includes a free 30-day test installation of **The Unscrambler® X** to be able to apply the methods right away in your own area of work. Individual personal computer will be organized for practical exercises during training

- ▶ The number of seats for the course is limited to 10
- ▶ Deadline for registrations: 2 weeks before the course start
- ▶ Payment: Along with registration

Venue

**CAMO Software India Pvt. Ltd.,
14-15, Krishna Reddy Colony
Domlur Layout, Bangalore, INDIA - 560071**

contact

**Bhanu Prakash : E-mail: bhanup@camo.com
Mob: +91 95913 79494**

Cancellation/Substitution: Cancellations up to 2 weeks before the start date of the course will be refunded with 50% of the registration fee. Cancellations made less than 2 weeks before the start date of the course will not be refunded. The course participants may be substituted provided that Camo is notified.



CAMO Software

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www.camo.com



Public Training Registration Form

Topic

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process monitoring and quality inspection**

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Venue : CAMO Software India Pvt. Ltd.
Academic Price : ₹ 19,920 + tax
Industry Price : ₹ 24,900 + tax

Registered Date	
Name	
Designation	
Department	
Company/University	
Email	
Mode of Payment	<input type="checkbox"/> DD <input type="checkbox"/> Cheque
Address	
Phone	
Fax	
Comments	

Contact: **Bhanu Prakash**
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