COURSE SCHEDULE
Monday 20 May - Day 1

08.30 - 09.00	Registration - Roderic Hill Building
09.00 - 10.30	Session 1 (Lecture Theatre 3)
10.30 - 11.00	Break - Teas & coffees provided
11.00 - 12.30	Session 2
12.30 - 13.45	Lunch (not provided)
13.45 - 15.15	Session 3
15.15 - 15.45	Break - Teas & coffees provided
15.45 - 16.55	Session 4
16.55	End of day 1
17.00	Drinks Reception

TOPICS:- Principal Components Analysis Fundamentals and Common Applications

- *Geometric and statistical introduction to PCA • Algorithms and objective functions*
- *Global diagnostics and contributions • Outlier Detection • Multivariate process monitoring • Establishing multivariate specifications for materials • Unsupervised clustering and classification*

Tuesday 21 May

09.00 - 10.30	Session 1 (Lecture Theatre 3)
10.30 - 11.00	Break - Teas & coffees provided
11.00 - 12.30	Session 2
12.30 - 13.45	Lunch (not provided)
13.45 - 15.15	Session 3
15.15 - 15.45	Break - Teas & coffees provided
15.45 - 17.00	Session 4
17.00	End of day 2

TOPICS:- Partial Least Squares fundamentals and common applications
• Objective function & reduced rank regression • Algorithms • Parametric interpretation and model diagnostics • Chemometrics and soft sensors • Multi-block methods

Wednesday 22 May

09.00 - 10.30	Session 1 (Lecture Theatre 3)
10.30 - 11.00	Break - Teas & coffees provided
11.00 - 12.30	Session 2
12.30 - 13.45	Lunch (not provided)
13.45 - 15.15	Session 3
15.15 - 15.45	Break - Teas & coffees provided
15.45 - 17.00	Session 4
17.00	End of day 3

TOPICS:-Advanced Applications of Process Analytics using Multivariate Methods I
- *Batch process analysis and monitoring • Quick introduction to PYOMO*
- *Process and product design using PLS with optimization tools • In-silico formulation of new products (blending optimization) • Optimization Based Chemometrics for spectral calibration to mass fractions (EIOT)*

Thursday 23 May

09.00 - 10.30	Session 1 (Lecture Theatre 3)
10.30 - 11.00	Break - Teas & coffees provided
11.00 - 12.30	Session 2
12.30 - 13.45	Lunch (not provided)
13.45 - 16.30	Session 3
16.30	End of course

TOPICS:- Advanced Applications of Process Analytics using Multivariate Methods II
- *Handling of missing samples • Adaptive and localized modeling • Building hybrid models with PLS*

YOU HAVE ANY QUESTIONS ABOUT THE COURSE, PLEASE EMAIL SARGENT.CENTRE@IMPERIAL.AC.UK

Course presenter

This course will be delivered by **Dr Salvador Garcia-Munoz,** Visiting Professor at Imperial College London, with 20+ years of experience in the implementation of systems engineering tools to industrial problems. He works for the pharmaceutical R&D sector leading the application of digital design tools for the development of new products and accelerated process design.

He is an active member of AIChE, a founder of the Systems Based Pharmaceutics Alliance and associate editor for Chemical Engineering Research and Design. His research in multivariate modelling spans from industrial applications to the development of new methods and algorithms to analyse complex datasets common in contemporary industrial scenarios.

https://www.imperial.ac.uk/people/s.garcia-munoz

Sargent Centre
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