PharmaMV

Training Schedule
Day 1

0900   **Introduction**
About Perceptive Engineering
Objectives of this course

0930   **Software Overview**
Real Time and Development Software Versions
Projects: What is a project?
              Creating a new project
              Loading an existing project
              Project Workflow
Fundamentals: Screens, Explorer Bar
              Status Bar, Signals
              Data Channels

1000   **Data Import / Export / Trending**
Opening Existing Data Files
Plots
Data Table, Pasting Data into The Data Table
Saving Data Files
Case Study

1200   **Lunch**

1300   **PharmaMV for PAT Applications**
Project Workflow
Hierarchy of building blocks for PAT applications
PharmaMV: Soft Sensors
              Simulator
              Operator Advisor
              Batch Control
Closed Loop systems using Analysers
Integration with third party systems

1430   **Data Analysis and Data Pre-Processing**
Analysis Range
Data Selector, Bad Data Detection and Replacement, Outlier Removal
Data Processing Operations
Case Study

1600   **Data Visualisation**
Scatter Plots
Distribution Plots
Process Capability Charts
Shewhart EWMA and CUSUM Charts
Correlation Analysis
Power Spectrum
Parallel Co-ordinates

1700   **Questions and Answers Day 1**

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Training Schedule
Day 2

0900	**Process Modelling Using PCA Analysis**
	Blocks and Models
	Block Types
	Multiple Models
	Data Requirements for PCA Modelling
	Model Configuration
	How many Scores?
	Loadings - explained
	Model Validation
	The Model Record
	Case Study
1030	**Dynamic Process Modelling Using PLS/RLS**
	Data requirements for Dynamic Modelling
	Overview of Technologies
	ARX / FIR structures
	Delay spreads
	Model order
	Absolute vs Incremental
	Causes and effects
	Modelling using RLS
	Modelling using PLS
	Coefficients
	Model Validation
	Tips for Soft sensor development
	Case Study
1200	**Lunch**
1300	**Batch Data Analysis**
	Differences between continuous and batch data
	'Unfolding' batch data
	Batch Data Modelling
	Case Study
1430	**Spectral Data Analysis**
	Integrated Data Management
	Pre-processing Spectral Data
	Visualising Batch, Discrete and Spectral Data
	Real-Time Connectivity
	Case Study
1530	**Optional:**
	a) Introduction to Control Engineering Facilities
	b) Parallel Co-ordinates
	c) Customer Data analysis
1700	**Course Finishes**

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