

- industry cross-fertilisation
- technology transfer
- industry forum
- seminars
- consultancy and case studies
- training

## Introduction to Process Control

### Agenda (1-day Course)

08.45 *REGISTRATION*

**09.00 Introduction**

- Motivation - The Need for Control
- Fundamental Control Trade-offs and Challenges

**09.30 Process Dynamics**

What are dynamics; Typical Responses

- Self-Regulating
- Integrating
- Nonlinearities
- Sensors / Actuators

10.45 *TEA/COFFEE*

**11.00 Process Dynamics Hands-on**

Real-life Example of how dynamics are found

**11.30 Applying PID Control**

- Proportional Control
- Integral Control Action
- Derivative Control Action

12.00 *LUNCH*

**12.45 Applying PID Control (Continue)**

- Implementation / Structures of PID
- Integral Wind-up; Bumpless Transfer
- Tuning Methods: Ziegler-Nichols; IMC

**13.30 PID Tuning - Hands-on**

Real-life Example of Tuning a Level Controller

14.30 *TEA/COFFEE*

**14.45 Enhanced Control**

Ratio control, Split Range Control, Coarse/Fine Control, Feed-forward Control, Cascade Control, Averaging Level Control, Dead-time Compensation, Linearising Control, Gain Scheduling, Decoupling Control

**16.00 What Makes Control Difficult and Practical Solutions**

Deadtime and Lag Filtering Noise; Noise and Derivative Action, Disturbances Inappropriate Controller Tuning Nonlinearities; Sensor, Saturation Example Actuator Problems - Hysteresis and Stiction

17.00 *CLOSE*