Course: Advanced Computer Aided Modelling

Lecture Schedule and course outline

Purpose: The course provides coverage of introductory and advanced process modelling and solution concepts for lumped and distributed systems, discrete event and hybrid systems. Mechanistic and data-based modelling concepts are also covered. The course should help the participant to develop skills in model formulation, analysis and solution of the model equations.

Course organization: This is a one week course where the focus is on lectures and hands-on exercises. The ICAS-MoT modelling tool-box will be used in the tutorials. Participants may, however, use any other tools such as Matlab.

Participants: The course is primarily intended for PhD and PDEng students. The maximum number of students is limited to 24.

Date: 6 – 10 September 2010

Location: University of Twente

Course Lecturer: Prof. Rafiqul Gani, Faculty of Science and Technology, the University of Twente.

Course outline and schedule

Lecture	Date	Topic
		Introduction to modelling and concepts – part 1
1	Day 1	Modelling in chemical engineering
2		Model building framework
3		Conservation principles
4		Constitutive relations
		Different types of models – part 2
5	Day 2	Modelling lumped parameter systems
6		Dynamic models in distributed parameter systems
7		Dynamic modelling using process data
8		Model identification & data-driven modelling
		Model analysis techniques – part 3
9	Day 3	Basic tools for model analysis
10		Lumped parameter model analysis
11		Model analysis for reduction, decomposition
		Model solution strategies & solution techniques – part 4
12	Day 4	Solution strategies for lumped systems I & II
13		Solution strategies for distributed parameter systems
14		Solution strategies for model identification
15	Day 5	**Computer aided modelling tools and modelling case studies – part 5**

Reference: K. Hangos & I. Cameron “Process modelling and model analysis”, Academic Press 2001 Plus lecture notes and ICAS-MoT (modelling software) based tutorials.