



SUBJECT DATASHEET

Semester:	2009/10/1
Subject:	Advanced Chemical Processes Modelling
Code:	VEMKFO4156A
Responsible department:	Department of Process Engineering
Responsible department code:	MKFO
Responsible lecturer:	dr. Sándor Németh

Educational objectives:

Introducing the advanced modeling of chemical processes and units.

Detailed content of the subject:

Introduction. Single phase system (gas, liquid), Expansion-compression (calculation of thermodynamic properties) Chemical reactors: types, flow models, mass and energy balance, development of reactor models Modeling of the fluid-fluid systems : boiling, condensation Modeling of the fluid-fluid systems: absorption, extraction, distillation Modeling of the fluid-fluid systems: gas-liquid reactors Modeling of the gas-solid systems: adsorption Modeling of the gas-solid systems: gas-solid reactors Modeling of the liquid-solid systems: solution, crystallization, extraction, liquid-solid reactors Case studies for the investigation of industrial systems. Development of the model of industrial system, solution of the model, analysis

Requirements:

Grading is based on the results of 2 midterm exams, final exam and 3-4 laboratory reports. All exams consist of theoretical and practical parts. Theoretical parts cover the modelling and analysis methods. Practical parts involve solving particular problems. The grade is determined with the weighting of results of the midterm exams and the reports.

Required and suggested references:

J. Ingham: Chemical Engineering Dynamics, VCH, Weinheim, Germany, 1994 Bird, Stewart, Lighfoot: Transport phenomena, Himmelblau, Bischoff: Process Analysis and Design Coulson, Richardson Chemical Engineering Vol 1-6