UNIVERSITY OF PANNONIA

SUBJECT DATASHEET

Semester:	2010/11/2
Subject:	Modelling of Chemical Processes
Code:	VEMKFOB114M
Responsible department:	Department of Process Engineering
Responsible department code:	MKFO
Responsible lecturer:	dr. Ferenc Szeifert

Educational objectives:

Introduction into hierarchic modelling of chemical processes.

Detailed content of the subject:

Introduction: Systems, models, classification of system models. The structure of technological systems, as the hierarchic system of the molecules in interaction. The usual levels of hierarchic technologies. General steps of methods of hierarchic modelling. Application of decomposition-coordination principle. The technological systems, as the network of the operation units. Concept of operation units, the set of variables. The processes in the operation units. Descriptions of the macroscopic and microscopic flows. Descriptions of sources. The chemical reactions. Descriptions of component, heat and impulse transfer. The changes of extensive quantities of operation unit. Making balance for the elementary space and the all geometric (and phase) space of operation units. Balance equations for phase mass, component mass, enthalpy and impulse. Population balance equations. Balance equations for several operation units. Connection of the balance equations and the state space models. Technology analysis.

Requirements:

Grading is based on one written midterm examinations and one written final examination. Every written examination consists of 3 examination questions. The final mark is determined according to following table based on the weigthed average of the points obtained for the midterm and the final written examination (midterm 20%, final 80): % final mark above 80 excellent (5) 70-79.99 good (4) 60-69.99 medium (3) 50-59.99 pass (2) below 50.99 fail (1)

Required and suggested references:

Benedek P., László A.: A vegyészmérnöki tudomány alapjai, Műszaki Könyvkiadó, Bp. 1964. Bequette, B. W.: Process Dynamics: Modeling, Analysis, and Simulation, Prentice Hall, London,1998.