UNIVERSITY OF PANNONIA

COURSE DATASHEET

Semester: 2012/13/2

Course: Advanced process modeling

Code: VEMKFOM458M

Responsible department: Department of Process Engineering

Department code: MKFO

Responsible instructor: dr. Sándor Németh

Course objectives:

Introducing the advanced modelling methods of the of chemical processes and units.

Course content:

Introduction. Review of the modeling of chemical technologies. Hierarchy, tendency and rigorous model, model reduction, information transfer
Modeling and analysis of dynamic system; treatment of time hierarchy
Development of the models of dynamic systems; Solution of the dynamic models
Dynamic simulators: structure of the software; main elements; application of the software
Investigation of single and multi phase units: gas-liquid systems
Investigation of multi phase units: gas-solid and liquid-solid systems
Investigation of multi phase units: gas-liquid-solid systems
Introduction of the modeling of typical chemical system: modeling of chemical, bio and polymerization reactors
Introduction of the modeling of typical chemical system: modeling of crystallization system
Investigation of fluid flow, residence time distribution, typical models
Review of the CFD models. Solution of the CFD models
Structure of the CFD simulators
Application of the artificial intelligence method and technique for modeling of chemical technology system: fuzzy models
Application of the artificial intelligence method and technique for modeling of chemical technology system: neural network models

Requirements, evaluation and grading:

Oral examination.

Required and recommended readings:

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Required and recommended readings: