



## COURSE DATASHEET

<b>Semester:</b>	2015/16/2
<b>Course:</b>	Advanced process modeling
<b>Code:</b>	VEMKFOM458M
<b>Responsible department:</b>	Department of Process Engineering
<b>Department code:</b>	MKFO
<b>Responsible instructor:</b>	dr. Sándor Németh

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### 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

### Requirements, evaluation and grading:

Oral examination.

### Required and recommended readings:

B. Wayne Bequette: Process Dynamics, Modeling, Analysis and Simulation, Prentice Hall PTR, 1998



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### Required and recommended readings:

Levenspiel: Chemical Reaction Engineering, Wiley, 1972

Jakobsen: Chemical Reactor Modeling, Multiphase Reactive Flows, Springer, 2008