



## COURSE DATASHEET

|                                |                                   |
|--------------------------------|-----------------------------------|
| <b>Semester:</b>               | 2012/13/1                         |
| <b>Course:</b>                 | Advanced Process Control          |
| <b>Code:</b>                   | VEMKFOM256I                       |
| <b>Responsible department:</b> | Department of Process Engineering |
| <b>Department code:</b>        | MKFO                              |
| <b>Responsible instructor:</b> | dr. Ferenc Szeifert               |

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### Course objectives:

Advanced process dynamics and control in chemical engineering.

### Course content:

The structure of controlled technology. Model based solutions. Used process models. Identification of process models. Design of feed forward control algorithms. Design of feedback control algorithms: model based controllers. Direct synthesis method. Internal model control. Model prediction control. Multi variable controllers. Artificial Intelligence in process control (artificial neural network, fuzzy models, soft sensors). Coordinated control. Optimization. Control of batch technologies (SP88). Total plant control. Control system design.

### Requirements, evaluation and grading:

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 weighed average of the points obtained for the midterm and the final written examination (midterm 40%, final 60): % 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 recommended readings:

1. D. E. Seborg, T. F. Edgar, D. A. Mellichamp: Process Dynamic and Control, Wiley, New York, 1989.
2. Bequette, B. W.: Process Dynamics: Modeling, Analysis, and Simulation, Prentice Hall, London,... 1998.
3. Szeifert F., Chován T., Nagy L., Almásy G.: Rendszermodellek-rendszeranalízis. VE jegyzet, VE-48/94, Veszprém, 1994.



# UNIVERSITY OF PANNONIA

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### Required and recommended readings:

4. Szeifert F., Chován T., Nagy L.: Szabályozóalgoritmusok - szabályozó tervezés VE jegyzet, VE 4/95, Veszprém, 1995.