



## COURSE DATASHEET

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|--------------------------------|----------------------------------------------------------|
| <b>Semester:</b>               | 2012/13/1                                                |
| <b>Course:</b>                 | Technical Fluid Mechanics and Engineering Thermodynamics |
| <b>Code:</b>                   | VEMKGEM143H                                              |
| <b>Responsible department:</b> | Department of Applied Mechanical Engineering             |
| <b>Department code:</b>        | MKAGT                                                    |
| <b>Responsible instructor:</b> | Dr. András Bálint                                        |

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### Course objectives:

Fundamentals of fluid mechanics of control valves.  
Expansion of the heat-technical basics.

### Course content:

Theoretical basic for fluid flow through control valves. Basic knowledge. Properties of fluids.  
Mass and energy conservations law in the fluid mechanics.  
Control valves selection. Calculation methods.  
Control valves selection on the basis of control loops requirements.  
Control valves noise. Basic knowledge.  
Noise sources at the control valves and the theoretical basic of prediction.  
Examining of characteristics of control valves.  
General differential equation of the heath-flow.  
Heat-flow in standing and flowing fluids.  
Numerical solutions of the general differential equation of the heath-flow.  
Numerical calculation of temperature distribution in standing medium (stationer occasion).  
Numerical calculation of temperature distribution in standing medium (instationer occasion).  
Heat-radiation.  
Heat-flow calculation used by Ansys FEM software (exhibition).

### Requirements, evaluation and grading:

taking part in lectures and seminars, successful tests.

### Required and recommended readings:

Control Valve Handbook. EMERSON Proces Managment. Fisher Controls International.  
Hans O. Engel: Stellgeräte für die Prozessautomatisierung. VDI Verlag  
Dr.Pleva L.-Zsiros L.: Műszaki hőtan, VE  
1990.; Dr.Pleva L.-Zsiros L.: Műszaki hőtan szemináriumi segédlet és példatár VE, 1994.; Mihejev: A



# UNIVERSITY OF PANNONIA

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### Required and recommended readings:

hőátadás  
számításának gyakorlati alapjai TK., 1990.