



## SUBJECT DATASHEET

<b>Semester:</b>	2009/10/1
<b>Subject:</b>	Technical Thermodynamics
<b>Code:</b>	VEMKGE2144G
<b>Responsible department:</b>	Department of Mechanical Engineering
<b>Responsible department code:</b>	MKGE
<b>Responsible lecturer:</b>	Tibor Borbély

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### Educational objectives:

To be acquainted with the fundamentals of thermodynamics and practical applications.

### Detailed content of the subject:

Fundamentals of thermodynamics. Change of states of ideal gases. 1-st Fundamental Law of thermodynamics. Change of heat and mechanical energy. 2-nd Fundamental Law of thermodynamics. Change of states of real fluids on  $i-s$  and graphs. Cycles: Carnot cycle, Rankine cycle, refrigeration cycle. Thermal efficiency. Thermodynamic efficiency. Co-operation of power station and chemical factories-heat accumulator. Thermodynamic processes and the entropy. Force cooling, refrigerating machine (compression-type and absorption machine). Heat conduction in medium at rest, with different boundary conditions. Heat conduction in medium in motion. Heat transfer. Application of Similitude Theory. Transmission of heat with respect constant and changing temperature difference. Parallel-flow and counterflow heat exchanger. Linear equations of heat exchangers, with respect parallel flow, counterflow, mixing box, and different systems. Heat exchanger devices. Heat insulation. Energetic problems of concentrating. Model and heat balance of evaporating dish. Multiply stage concentrating with subtract and without subtract. Concentrating with heat pump. Concentrating devices.

### Requirements:

Taking part in lectures and seminars, successful test

### Required and suggested references:

Pleva-Zsiros: Műszaki hőtan, VE 1990.; Pleva-Zsiros: Műszaki hőtan szemináriumai segédlet és példatár, VE 1994.; Mihajev: A hőátadás számításának alapjai TK 1990.; Pattantyús: A gépek üzemtana 4. fejezet MK 1983.; Szolcsányi P.: Vegyészmérnöki számítások termodinamikai alapjai 8. fejezet MK. 1975.