KYF0160 - Thermodynamics

Abi

course code	KYF0160
subject title in estonian	Termodünaamika
subject title	Thermodynamics
course volume CP	2.5
course volume ECP	4.00
assessment form	Examination
teaching semester	spring
course aims in English	To familiarize students with fundamentals of creation and action of materials and processes of sustainable energetics. To provide students with an overview of thermodynamic fundamentals of materials production and planning and operation of processes
learning outcomes of the subject in Eng.	Students are aware of fundamentals of creation and action of sustainable energetics materials and processes. Students are able to describe and analyze thermodynamic connections of energetic processes with the surrounding environment both in view of the environment as well as in that of the sustainable and environmental-friendly action of processes.
brief description of course content in English	Thermodynamics - the science of heat. Entropy and Energy. Coupled Physical Systems. Chemical Thermodynamics. Basics of irreversible thermodynamics. Subjects of engineering thermodynamics. Concept of the thermodynamic system and control volumes, the fundamental conservation principles, thermodynamic properties, states and cycles, equilibrium and quasi-equilibrium processes. Thermodynamic properties, property relationships and processes. Basic terms and concepts. Frequently used thermodynamic properties. Ideal gas properties. Nonideal gas properties. Solids. Ideal- gas mixtures. Conservation of mass. Mass conservation for the system. Mass conservation for a control volume. Reacting systems. Energy and energy transfer. Macroscopic and microscopic energies processed by systems. Heat and work. Temperature. Convection heat transfer. Conservation of energy. The first law. Second law of thermodynamics and some of its consequences. Kelvin-Planck statement. Reversible and irreversible processes. Cycle. Clausuis definition. Equilibrium constants. Steady- flow devices. Systems for power production, propulsion and heating and cooling.
study literature	4. R.A.Alberty and R. J. Silbey Physical Chemistry, John Wiley& Sons 1992. 5. P.Atkins Physical Chemistry, Oxford University Press 1998. 6. Castellan, G Physical Chemistry, Benjamin/Cummings 1983. 7. Silbey, R Physical Chemistry, Wiley 2001. 8. CRC Handbook of Chemistry and Physics , Edited by, David R.Lide, CRC Press New York 1997.
stationary study weekly hours	2.5
lectures	2.0
practice	0.0
exercises	0.5

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Course materials of Andres Trikkel

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