



COURSE DATASHEET

Semester:	2016/17/1
Course:	Studies in energetics I.
Code:	NKMKFIT112E
Responsible department:	
Department code:	MKNK
Responsible instructor:	Attila Lukács

Course objectives:

The aim of the subject is to allow students to get acquainted with the technological questions of electricity and thermal energy generation, with the structure of the thermal power plants and the principles of choosing and sizing the equipment and the characteristics of the operation.

Course content:

Heat generation: individual, central, district heating; technological (flue gas of high temperature), for consumers (heating, domestic hot water) from fossil fuels and renewable energy sources (biomass, geothermal, solar collector). Cooling, air conditioning. Energy generation by heat pump. Electricity generation: steam power plants, plants with gas turbines, combined gas-steam power plants, pressurised water nuclear power plants; fuel cells; hydroelectric, wind and geothermal power plants, solar power plants, photovoltaic solar cells. Cogeneration of electricity and heat: steam (steam backpressure turbine, condensing) and thermal power plants with flue gas as process medium (gas turbine and gas engine), biomass cogeneration technologies (heat, electricity, fuel and products). Gas engines and their characteristic parameters. Modern combustion installations, condensing furnaces. Steam cycle plants. The energetic processes, system structure, qualitative and quantitative losses and efficiency of the condensing power plants, ideal and real cycles. The purpose and basic solutions of feedwater heating, stirring and superficial feedwater heating contacts, precipitation cooling equipment.

Requirements, evaluation and grading:

Students must write two papers in a semester, one paper during the semester and one at the end of it. The final mark is the weighed mean value (rounded) of the two marks received for the two papers. The mark of the second (at the end of the semester) paper is multiplied by two. The mark of the second paper is strictly required to be at least 2, and the mean value of the two papers must be better than 2.00.

Required and recommended readings:

SZÜCS Ervin—SCHILLER István: Technika és energia II., ELTE TTK egyetemi jegyzet, Tankönyvkiadó, Bp.
VAJDA György: Energetika II., Akadémia K., Bp.
HARMATHA András: Termodinamika műszakiaknak, Műszaki. Könyvkiadó, Bp.
BŰKI G.: Erőművek. Műegyetemi Kiadó, Budapest, 2004. ISBN 963 420 788 X.