

Tárgytematika / Course Description **Operations of Machines**

GKNB_MGTA004

Tárgyfelelős neve /

Teacher's name: Hadas-Rapi Ádám

Félév / Semester: 2024/25/2

Beszámolási forma /

Assesment: Folyamatos számonkérés

Tárgy heti óraszám /

Teaching hours(week): 2/2/0

Tárgy féléves óraszám /

Teaching hours(sem.): 0/0/0

OKTATÁS CÉLJA / AIM OF THE COURSE

Based on the previously acquired Thermo- and Hydrodynamics knowledge, students learn the basic principles of the operation of the most important heat and flow engineering machines and equipments used in the energy industry or in manufacture, their basic operating characteristics and the basic calculations of their energy consumption or energy production.

TANTÁRGY TARTALMA / DESCRIPTION

This is an exam course, there are no contact lecture.

Planned scheduling

1 st week	- Power and efficiency. Losses in machine operation. Efficiency and load.
2 nd week	- Operation of machines from start to stop. Diagram of the motion. Multi-stage startup.
3 rd week	- The characteristic curve of the machine and the operation point, the control of its operation and its loss.
4 th week	- Pump's operation
5 th week	- Controll of pumps
6 th week	- Water- and Wind Turbines.
7 th week	- Positive Displacement Compressors.
8 th week	- Heat Exchangers.
9 th week	- Choloric machines, Rankine-Clausius cycle.
10 th week	- Refrigerators and Heat Pumps.
11 th week	- Principals of Ventilating- and Air-Conditioning Systems, HVAC.
12 th week	- Electricity generation.

SZÁMONKÉRÉSI ÉS ÉRTÉKELÉSI RENDSZERE / ASSESSMENT'S METHOD

1. Trail tests

The students can be practise to the exam with trail test. This test will be available in the SzE-Learning site (www.szelearning.sze.hu) during the semester with unlimited times.

2. Laboratory measurement Rules and details will be an other doument on SzE-Learning.

5. Signature at the end of the semester and conditions of exam

The course is subject to continuous evaluation.

The end-of-semester grade is determined on the basis of the points collected by the student during the semester, as described in point 6.

6. Method of determining the semester grade

To write all the three tests during the semester is obligatory.

The tests last 75 minutes, each test consists of 4 practical examples to solve and 5 theoretical questions to answer.

10 points can be obtained for each correct solution of examples, 2 points can be obtained for each correct answer to the questions.

The following grades are going to be defined:

Total points	Grade
- 74	fail (1)
75 - 58	pass (2)
59 - 67	satisfactory (3)
68 - 75	good (4)
76 -	excellent (5)

7. Improvement of insufficient semester grade

In order to succeed the semester, further two tests can be written in the exam term. You can

register in the NEPTUN system.

- the point from the test will be deleted
- only one test will be written, which will include all material in the semester (6 practicals, 12 theoreticals)
- you can score maximum 84 points (6x10 + 12x2)
- you can score the following grades:

total points	grade
0 - 41	fail (1)
42 - 58	success (2)
59 - 67	satisfactory (3)
68 - 75	good (4)
76 -	excellent (5)

8. Office hours

The time and place of the weekly consultation, which will be held on a weekly basis, will be determined by the schedule and will be announced in a separate message.

On individual request via e-mail, individual consultation is possible at other times occasionally!

KÖTELEZŐ IRODALOM / OBLIGATORY MATERIAL

Required literature (available in library and technical antique stores)

(only in hungarian)

Pattantyús Á. Géza: A gépek üzemtana Műszaki Könyvkiadó, Bp.

Recommended literature (available in library and technical antique stores)

(only in hungarian)

Füzy Olivér: Áramlástechnikai gépek Műszaki Könyvkiadó, Bp.
Grúber József: Ventilátorok Műszaki Könyvkiadó, Bp.
Fülöp Zoltán: Gázturbinák Műszaki Könyvkiadó, Bp.
Komondy Zoltán: Hűtőgépek Tankönyvkiadó, Bp.
Fülöp Zoltán: Gőzturbinák Tankönyvkiadó, Bp.
Menyhárt József: Szellőzés technika Tankönyvkiadó, Bp.

Misc.

In the Documents section of the szelearning.sze.hu site materials will be published that can be used for learning, preparing for tests, doing assignments, and preparing the measurement report.

AJÁNLOTT IRODALOM / RECOMMENDED MATERIAL