BSc in Mechanical Engineering 2N-AG0/2NAAG0,
Process Engineering specialization 2N-AG0-PE

Mechanical Engineering
compulsory subject

SUBJECT DATA SHEET AND REQUIREMENTS

last modified: 11th October 2019

VOLUMETRIC PUMPS AND COMPRESSORS

(VEGYIPARI ÉS ÁRAMLÁSTECHNIKAI GÉPEK)

1	Code	Semester Nr. or fall/spring	Contact hours/week (lect.+sem.+lab.)	Requirements p / e / s	Credit	Language
	BMEGEVGAG04	**f**	**1+1+0**	**p**	**2**	**English**

2. Subject's responsible:

Name:	Position:	Affiliation (Department):
Csaba Hős, PhD	Associate professor	Dept. of Hydrodynamic Systems

3. Lecturer:

Name:	Position:	Affiliation (Department):
Csaba Hős, PhD	Associate professor	Dept. of Hydrodynamic Systems
Lászó Kullmann, PhD	Ret. associate professor	Dept. of Hydrodynamic Systems

4. Thematic background of the subject:

The course covers the basics of positive displacement pumps and compressors (operation, design and maintenance).

5. Compulsory / recommended prerequisites:

Compulsory: -
Suggested: -

6. Main aims and objectives, learning outcomes of the subject:

Upon finishing the course, the students will be familiar with the operating principles and basic types of positive displacement pumps and compressors. They will be able to perform simple sizing tasks and design basic hydraulic circuits.

7. Method of education:

lecture: 1h/w
seminar: 1h/w
laboratory: 0h/w
homework: two design problems

8. Detailed thematic description of the subject (by topic, min. 800 character):

Positive displacement pumps. Pump characteristic and performance. Reciprocating and rotary types. Gear pumps. Performance of a gear pump. Characteristics. Pressure balancing. Bearing forces. Screw pumps. Screw pumps for delivery of higher viscosities fluid. Roots blower. Delivery, isentropic and adiabatic power. Reciprocating compressors. Compression efficiency. Valves. Regulation. Pressure-volume diagrams for different methods of regulating and governing compressors. Sliding vanes pump. Characteristic performance. Capacity and efficiency. Effect of viscosity.

9. Requirements and grading

a) in term-period

Submitting the two homeworks (50%);
Mid-term test (50%);
Attend minimum 70% of the classes.

b) in examination period

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c) Disciplinary Measures Against the Application of Unauthorized Means at Mid-Terms, Term-End Exams and Homework

According to the Code of Studies (Rector's Order № 7 of 2017 (6 November 2017) with the amendments of Rector's Order № 3 of 2018 (30 August 2018)),
available at: https://gpk.bme.hu/downloads/en/BME_Code_of_Studies.pdf

d) grade

The mid-term grade is based on performance scores as shown in the table below.

grade ● [ECTS]	**points**
jeles(5) ● Excellent [5]	above 85%
jó(4) ● Good [4]	72,5–85%
közepes(3) ● Satisfactory [3]	65–72,5%
elégséges(2) ● Pass [2]	50–65%
elégtelen(1) ● Fail [1]	under 50%

10. Retake and repeat

According to the Code of Studies.

11. Consulting opportunities:

Consultation hours: by email appointments

12. Reference literature (compulsory, recommended):

- Lecture notes
- Downloadable materials: www.hds.bme.hu

13. Home study required to pass the subject:

Contact hours	28	h/semester
Home study for the courses	0	h/semester
Home study for the mid-semester checks	0	h/check
Preparation of mid-semester homework	16	h/homework
Home study of the allotted written notes	0	h/semester
Home study for the mid-term test	16	h/semester
Totally:	**=30×2=60**	**h/semester**

14. The data sheet and the requirements are prepared by:

Name:	Title:	Affiliation (Department):
Csaba Hős, PhD	Associate professor	Dept. of Hydrodynamic Systems

15. Contact person for administrative questions:

Csaba Hős, PhD, cshos@hds.bme.hu