

## Tárgytematika / Course Description Electric Machines

GKNM\_AUTA025

**Tárgyfelelős neve /**

**Teacher's name:** Marcsa Dániel

**Félév / Semester:** 2023/24/1

**Beszámolási forma /**

**Assesment:** Vizsga

**Tárgy heti óraszám /**

**Teaching hours(week):** 2/1/0

**Tárgy féléves óraszám /**

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

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### OKTATÁS CÉLJA / AIM OF THE COURSE

The goal of the course is to provide a comprehensive overview on the fundamentals of electric machines taking a brief look at modelling and control issues also. The course supports the students understanding of the fundamental concepts and principles of operation of various types of electrical machines. The aim of the course is to equip the students with basic analytical and modeling skills for handling problems associated with electromechanical systems.

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### TANTÁRGY TARTALMA / DESCRIPTION

*Topics of lectures:*

week 1: Fundamentals, types and constructional features of electric machines.

week 2: Basic principles of energy conversion process.

week 3: Magnetic circuits and induction basics.

week 4: Magnetic circuits and induction exercises.

week 5: Transformers.

week 6: Basic concepts in rotating electrical machines.

week 7: DC (Commutator) and Permanent Magnet Machines.

week 8: Synchronous Machine.

week 9: Induction Machines.

week 10: Park's equations.

week 11: Control Methods.

week 12: Generalized Theory of Electrical Machines.

week 13: Exam Preparation and project work presentations.

week 14: Test.

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## **SZÁMONKÉRÉSI ÉS ÉRTÉKELÉSI RENDSZERE / ASSESSMENT'S METHOD**

During the semester the obligation is to pass one test and present a project work. The test is scheduled for the 14th week and the presentation for the 13th week. The test contains of two theoretical questions and one example of maximum 10 points per each. Pass level is minimum 12 points. The final mark is composed as follows: 75% for the written/oral exam and 25% for the test.

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## **KÖTELEZŐ IRODALOM / OBLIGATORY MATERIAL**

Lecture notes

Selected bibliography

Jan A. Melkebeek, Electrical Machines and Drives - Fundamentals and Advanced Modelling, Springer, 2018

D.P. Kothari, I.J. Nagrath, Electric machines, Tata McGraw-Hill Education, 2004

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**AJÁNLOTT IRODALOM / RECOMMENDED MATERIAL**