

Tárgytematika / Course Description

Automatic Controls

GKNM_AUTA011**Tárgyfelelős neve /****Teacher's name:** dr. Kuczmann Miklós**Félév / Semester:** 2025/26/2**Beszámolási forma /****Assesment:** Vizsga**Tárgy heti óraszám /****Teaching hours(week):** 2/0/0**Tárgy féléves óraszám /****Teaching hours(sem.):**

OKTATÁS CÉLJA / AIM OF THE COURSE

Introduction to the advanced level of system theory and control.

The students will understand system theory, the mathematical modeling and identification of physical systems, and they will be able to design and analyze modern control systems.

TANTÁRGY TARTALMA / DESCRIPTION

1.hét	Physical system representation by ordinary differential equations.
2.hét	Signals and systems overview.
3.hét	State space model of physical systems.
4.hét	Solution of state space representation. Stability.
5.hét	State feedback. Observability, controllability.
6.hét	State feedback control design.
7.hét	Linear quadratic control design.
8.hét	Modeling by state space representation.
9.hét	System identification.
10.hét	MIMO system state feedback control. MIMO pole placement, observer design.
11.hét	Kalman filter.
12.hét	Introduction to optimal control.
13.hét	Introduction to nonlinear control.

SZÁMONKÉRÉSI ÉS ÉRTÉKELÉSI RENDSZERE / ASSESSMENT'S METHOD

Written exam in the exam period.

KÖTELEZŐ IRODALOM / OBLIGATORY MATERIAL

Kötelező irodalom: előadás kézírata; Hangos Katalin, Bokor József, Szederkényi Gábor, Computer Controlled Systems, Veszprémi Egyetemi Kiadó, 2002

Ajánlott Irodalom: Keviczky László, Control Engineering, Universitas-Győr, 2006.

AJÁNLOTT IRODALOM / RECOMMENDED MATERIAL