# Tárgytematika / Course Description

## Automatic Controls

### GKNM_AUTA011

**Tárgyfelelős neve / Teacher's name:** dr. Kuczmann Miklós

**Félév / Semester:** 2020/21/2

**Beszámolási forma / Assesment:** Vizsga

**Tárgy heti óraszáma / Teaching hours(week):** 2/0/0

**Tárgy féléves óraszáma / Teaching hours(sem.):** 0/0/0

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### OKTATÁS CÉLJA / AIM OF THE COURSE

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### TANTÁRGY TARTALMA / DESCRIPTION

Physical system representation by ordinary differential equations.

Signals and systems. The Laplace transform. Transfer function.

Controllability, Observability.
Transfer function from state space model.

Solution of state space equations.

Full state feedback control. Pole placements (SISO LTI).
Stability.

Linear Quadratic Control.

Modeling. Linear and nonlinear ODE. Operating point.

System identification.

MIMO system state feedback control. MIMO pole placement. Observer.

Kálmán filter.

Introduction to optimal control.

Introduction to nonlinear control.

Introduction to new trends.

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### SZÁMONKÉRÉSI ÉS ÉRTÉKELÉSI RENDSZERE / ASSESMENT'S METHOD

Written exam in the exam period.

## KÖTELEZŐ IRODALOM / OBLIGATORY MATERIAL

Handwritten lecture notes.

Keviczky László, Control Engineering, Universitas-Győr Kht, Győr, 2011.

Hangos Katalin, Bokor József, Szederkényi Gábor, Computer Controlled Systems, Veszprémi Egyetemi Kiadó, 2002.

Lantos B.-Márton L.: Nonlinear Control of Vehicles and Robots. Springer, 2011