UNIVERSITY OF PANNONIA

COURSE DATASHEET

Semester:	2015/16/1
Course:	Software.in-the-Loop and Hardware-in-the-Loop testing related to Aotomotive
Code:	VEMKGEM453T
Responsible department:	Institute of Mechanical Engineering
Department code:	MKGEI
Responsible instructor:	Dr. Dénes Fodor

Course objectives:

The software of embedded systems in the automotive area must fulfill high safety requirements. Tests must enclose the interaction with the hardware and the physical environment. The usual approach for such tests is the HIL (Hardware-In-The-Loop) test. The completely integrated system, consisting of hardware and software, is coupled with a simulation of the environment and is executed on a real-time basis.
An alternative or additional approach is the SIL (Software-In-The-Loop) test which couples partially integrated software with an environment simulation. Instead of the usage of electrical interfaces, software interfaces provided by the operating system are used here which allows a direct information-technical communication with the simulation. SIL tests can be introduced early during the software development and offers the possibility to execute tests before the Hardware & Software integration tests.

Course content:

SIL (Software-In-The-Loop) simulation principle
SIL (Software-In-The-Loop) realization
HIL (Hardware-In-The-Loop) simulation principle
HIL (Hardware-In-The-Loop) realization
Matlab SIL simulations
Matlab SIL tests
LabView/Veristand SIL simulations
LabView/Veristand HIL simulations
Continental HIL (CVT) introduction
Continental HIL (CVT) simulations
Continental HIL (CVT) tests
Different Applications

Requirements, evaluation and grading:

Required and recommended readings:

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Required and recommended readings:

Ian Sommerville: Szoftverrendszerek fejlesztése, Panem Kiadó, 2002
IEC61508
Qing Li / Caroline Yao: Real-Time Concepts for Embedded Systems
David E. Simon: An Embedded Software Primer