

Course title: Embedded Systems and Architecture	Neptun code: GEVAU460-a
Course coordinator: Dr. József Vásárhelyi, PhD, dr. habil., professor	
type of lesson and number of lessons: lecture (2)	
method of evaluation: colloquium	
curriculum location of the subject: (autumn/spring semester): autumn and spring	
pre-study conditions (<i>if any</i>): C/C++	
The task and purpose of the subject:	
The purpose of the subject is to give advanced knowledge about system Architectures of Embedded systems and microcontrollers. Also to learn design methodology when using FPGA technology. The students will get knowledge about embedded hard and soft processors.	
Course description:	
The course give advanced knowledge for the PhD students in System on Chip modelling, simulation and design with different methods. ARM and RISC V. architectures, Soft and hard processors for SOC, System modelling and simulation with hardware description languages, High level modelling, HIL (Hardware in the Loop) test methodology.	
Required literature:	
<ol style="list-style-type: none"> 1. Edward Ashford Lee and Sanjit Arunkumar Seshia, Introduction to Embedded Systems a Cyber-physical Systems Approach, Second Edition, MIT Press, 2017, ISBN: 978-0-262-53381-2, pp. 585. 2. Ariel Lutenberg, Pablo Gomez, Eric Pernia, A Beginner's Guide to Designing Embedded System Applications on Arm Cortex-M Microcontrollers, ISBN: 978-1-911531-42-5 (ePDF) 978-1-911531-41-8 (print), 2022, pp. 620. 3. Joseph Yiu, System-on-Chip Design with Arm® Cortex®-M Processors, ARM Education Media, ISBN: 978-1-911531-19-7, 2019, pp. 334. 	
Recommended literature:	
<ol style="list-style-type: none"> 1. Scott Hauk and Adnré Dehon – editors: Reconfigurable Computing, The Morgan Kaufmann Series in Systems on Silicon Series Editor: Wayne Wolf, Georgia Institute of Technology, ISBN 978-0-12-370522-8 (alk. Paper), 2008, pp. 945. 	