



1. Subject name	Signal processing in transport				
2. Subject name in Hungarian	Jelfeldolgozás a közlekedésben				
3. Code	BMEKOKAM211	4. Evaluation type	exam grade	5. Credits	5
6. Weekly contact hours	2 (10) Lecture	2 (11) Practice	0 (0) Lab		
7. Curriculum	Transportation Engineering MSc (K)	8. Role	Specialization (sp) at Transportation Engineering MSc (K)		
9. Working hours for fulfilling the requirements of the subject					150
Contact hours	56	Preparation for seminars	12	Homework	7
Reading written materials	43	Midterm preparation	12	Exam preparation	20
10. Department	Department of Control for Transportation and Vehicle Systems				
11. Responsible lecturer	Dr. Bokor József				
12. Lecturers	Lövétei István				
13. Prerequisites					
14. Description of lectures					
Characteristics of microprocessors, internal architectures, operation modes. Linear and interruption controlled functioning. Characteristics of microcontrollers, the MCS-51 architecture. Internal registers, instruction set. Realization of the serial communication by microcontroller: RS-232, RS-485, fail-safe RS-485, CAN. Data protection, secure data transfer. A/D and D/A converters. Filtering of digital signals. Digital Signal Processors (DSPs). Software development processes, safety-related software development. Safety related HW and SW systems. Samples in transportation applications.					
15. Description of practices					
In practices, every student programs an own microprocessor type Intel-8051, on a computer based developping environment. In the first half of the semester (weeks 1-7) the ASM, in the second half of the semester (weeks 8-14) the C is the used programming language.					
16. Description of labortory practices					
17. Learning outcomes					
A. Knowledge <ul style="list-style-type: none">• knows the basics of building embedded systems• knows the basic serial communication techniques• knows the basic principles of A / D and D / A conversion• knows basic signal processing algorithms B. Skills <ul style="list-style-type: none">• capable of programming embedded systems• is able to design data collection systems C. Attitudes <ul style="list-style-type: none">• is interested in modern IT solutions D. Autonomy and Responsibility <ul style="list-style-type: none">• is able to apply the knowledge acquired here to other similar, yet unknown systems					
18. Requirements, way to determine a grade (obtain a signature)					
In the study period 2 midsemester exams and one homework, all of them are the prerequisites of the signature, and consequently of the final exam. The final result is the 1/3 - 2/3 ratio of the study period performance (within the ratios: 1/3 for 1st midterm, 1/3 for 2nd midterm, 1/3 for homework) and the exam note.					
19. Opportunity for repeat/retake and delayed completion					
All tasks can be retried based on the Code of Studies.					
20. Learning materials					

Lecture notes

Effective date

10 October 2019

This Subject Datasheet is valid for

Inactive courses