



1. Subject name	I+C technologies				
2. Subject name in Hungarian	I+K technológiák				
3. Code	BMEKOKAM104	4. Evaluation type	mid-term grade	5. Credits	3
6. Weekly contact hours	2 (9) Lecture	1 (5) Practice	0 (0) Lab		
7. Curriculum	Transportation Engineering MSc (K)	8. Role	Mandatory (mc) at Transportation Engineering MSc (K)		
9. Working hours for fulfilling the requirements of the subject					90
Contact hours	42	Preparation for seminars	8	Homework	0
Reading written materials	22	Midterm preparation	18	Exam preparation	0
10. Department	Department of Control for Transportation and Vehicle Systems				
11. Responsible lecturer	Dr. Bécsi Tamás				
12. Lecturers	Dr. Sághi Balázs, Dr. Aradi Szilárd				
13. Prerequisites					
14. Description of lectures					
<p>Numeral systems and coding. Overview of numeral systems involved in computing, conversion procedures between numeral systems. Number coding procedures: pure binary code, complement code, BCD code. Character encoding methods: ASCII coding, character encoding.</p> <p>Arithmetic. Operations with binary numbers: binary addition, complement code addition, BCD addition, subtraction algorithms, multiplication algorithms, division algorithms.</p> <p>Components for computers. Logical gates, repositories, multiplexers and demultiplexers, registers, counters and their use.</p> <p>Computer Structure. Processors: The task, structure and operation of the processors. Historical development of processors.</p> <p>Memory: the task, types, structure and operation of the memories. Bus systems: the task, structure and operation of bus systems; different types of bus systems used in computers; industrial bus systems and their characteristics.</p> <p>Computer peripherals. Mass storage: magnetic mass storage devices (flexible and hard disks, magnetic tape storage), optical storage procedures, electronic storage devices. Publishers: CRT and LCD displays. Input devices: mouse, keyboard and special input devices.</p> <p>Computer communication. Physical and logical implementation of communication: serial and parallel data transmission, synchronous and asynchronous data transmission. Standard communication protocols. Computer Networks: General and Industrial Network Structures and Protocols, Network Devices. Wireless communication technologies: bluetooth, IR, WiFi etc. Special transport communication technologies</p>					
15. Description of practices					
Implementation of the methods learned during the lectures					
16. Description of labortory practices					

A. Knowledge

- knows the basics of building computer systems
- knows the basic mathematical / arithmetic background of computing
- knows the operating principles of different peripherals
- knows basic communication technologies

B. Skills

- capable of programming embedded systems
- is able to design data collection systems

C. Attitudes

- is interested in modern IT solutions

D. Autonomy and Responsibility

- is able to apply the knowledge acquired here to other systems unknown to it

18. Requirements, way to determine a grade (obtain a signature)

Two midterm exams

19. Opportunity for repeat/retake and delayed completion

One exam can be retried at the end of the semester

20. Learning materials

Lecture Notes

Effective date

10 October 2019

This Subject Datasheet is valid for

Inactive courses