Vehicle automation systems

1. Subject name	Vehicle automation systems				
2. Subject name in Hungarian	Járművek automatizálási rendszerei				
3. Code	BMEKOGGM659	4. Evaluation type	exam grade	5. Credits	4
6. Weekly contact hours	2 (10) Lecture	0 (0) Practice	2 (11) Lab		
7. Curriculum	Vehicle Engineering MSc (J)	8. Role	Specialization (sp) at Vehicle Engineering MSc (J)		
9. Working hours for fulfilling the requirements of the subject					120
Contact hours	56	Preparation for seminars	18	Homework	16
Reading written materials	20	Midterm preparation	0	Exam preparation	10
10. Department	Department of Automotive Technologies				
11. Responsible lecturer	Dr. Szalay Zsolt				
12. Lecturers	Dr. Szalay Zsolt, Dr. Török Árpád, Dr. Tihanyi Viktor				
13. Prerequisites					

14. Description of lectures

Presentation of the framework for vehicle automation, architectures built into electronic control units, sensors, actuators and communication systems, and their classification. Description of vehicle control systems. Functions and tasks of the different control layers, elements of the sensor layer, driver interface, trajectory planning, decision making, command line design, and intelligent actuators for executive systems. The need for redundancy based on functional and safety requirements. Introducing and classifying in-vehicle communications technology used in the automotive industry. Control unit communication (serial, I2C, SPI), communication between control units (CAN, LIN, MOST, FlexRay, OPEN), vehicle-vehicle connection (V2V) and vehicle-infrastructure communication (V2I), telemetry systems. Structure and operation of vehicle diagnostics protocols (K-Line, KWP, UDS).

15. Description of practices

16. Description of labortory practices

The task is to work out an network and communication related topic including realization, testing and documentation

17. Learning outcomes

A. Knowledge
- Knowledge of network and communication systems

B. Skills
- Ability to develop network and communication systems

C. Attitudes
- Openness to new opportunities in the field

D. Autonomy and Responsibility
- Participate in solving independent task

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

Signature: Individual task fullfilment
Final grade equals to the result of exam

19. Opportunity for repeat/retake and delayed completion

Individual taks replacement one

20. Learning materials

Slides

Effective date	10 October 2019	This Subject Datasheet is valid for	Inactive courses