Description of an Individual Course Unit

Study program	Electrical Engineering and Computing	
Module	Signals and Systems	
Type and level of studies	basic academic studies	
Course title	Autonomous mobile robots	
Professor (for lectures)	Jovanović M. Kosta	
Professor/assistant (for practice)	Jovanović M. Kosta, Knežević M. Nikola	
Professor/assistant (for LAB)	Jovanović M. Kosta, Knežević M. Nikola	
Number of ECTS	6 **Type of the course (mandatory/elective)**	elective
Prerequisit		
Objective of the course	Introduces students to the concept of locomotion, localization and navigation robots in space, sensors systems and programing service robot systems on software platform ROS.	
Learning outcomes of the course	Students will be able to work on design and control of service mobile robots and autonomous vehicle.	
Course Contents		
Theoretical contents	Principles of movement of robots and autonomous vehicles: terms, models, applications and constraints. Sensors system: proximity sensor, touch sensor, encoders, haptic sensors. Decision based on multiple sensors. Localization and mapping space. Path planning and navigation of robot. Basic hardware and software architecture of service robots (ROS).	

Practical part (practices, LAB, study research work)	Exercises on education platforms in area of service mobile robotics - TurtleBot, DaNI. Programming robots in a dedicated platform - ROS. Project tasks on selected topics.

Literature

1	R. Siegwart, I. Nourbakhsh, Introduction to Autonomous Mobile Robots
2	B. Siciliano, O Khatib, Springer handbook of robotics, Springer-Verlag, Berlin.
3	B. Fraden, Springer handbook of modern sensors
4	М. Поповић, Сензори у роботици
5	

Number of ECTS

Lectures	Practices	LAB	Study research work	Other activities
3	2			

Teaching Methods	Lectures, exercises, seminar papers, consultations

Grading methods (max. number of points is 100)

Pre-exam assesments	points	Final examination	points
activity during lectures	0	written exam	40
practical assesments	60	oral exam	0
mid-term exams	0		
seminars	0		