Obuda University John von Neumann Faculty of Informatics			*Institute of Biomatics and Applied Artificial Intelligence*	
Service robots, medical robots			**Credits*: 3***	
Computer Science Engineering MSc *ROB spec*			*2022/23 year II. semester*	
Responsible person of subject: Tamás Haidegger, PhD				
Subject lecturers: Tamás Haidegger, PhD, Renáta Nagyné Elek				
Prerequisites (with code):	-			
Weekly hours:	Lecture: 2	Seminar.: 0	Lab. hours: 0	Consultation: 0
Way of assessment (exam or midterm grade):	Exam grade			
Course description:				
Goal: The aim of the subject is to learn about the main directions of computer-integrated surgery, modern medicine and service robots.				
Course description: The course presents the most important technological trends in computer-integrated surgery, e.g.: robot-assisted surgery, surgical skills assessment, image-guided surgery, neural network-based medical image processing, medical imaging. The course introduces service robots, their use and standardization.				

Lecture schedule	
Education week	*Topic*
1.	Introduction of service robots and computer-integrated surgery
2.	Laboratory demonstration at the Antal Bejczy Center for Intelligent Robotics
3.	Basics of robotics
4.	Da Vinci Surgical System
5.	Medical imaging
6.	Surgical autonomy
7.	Image-guided surgery
8.	Project practice lab
9.	Surgical skills assessment
10.	AR/VR
11.	Neural networks
12.	Da Vinci competitors
13.	Business considerations in modern medicine
14.	Midterm, project presentation

Midterm requirements

Midterm and project work (satisfactory results for both)

Assessments schedule	
Education week	*Topic*
14	Midterm 1-13. week lectures
14	Project presentation

2023. 02. 06.

Final grade calculation methods

Achieved result	Grade
85%-100%	excellent (5)
70%-84<%	good (4)
60%-69<%	average (3)
50%-59<%	satisfactory (2)
0%-49<%	failed (1)

Final grade = 0.5*Midterm + 0.5*project work
A minimum of 50% must be achieved in each part.

Type of exam

written

Type of replacement

Retake midterm or project work

References

Obligatory: Lectures

Recommended: D'Ettorre, Claudia, et al. "Accelerating Surgical Robotics Research: Reviewing 10 Years of Research with the dVRK." arXiv preprint arXiv:2104.09869 (2021).