

## COURSE INFORMATION LETTER

<b>University:</b> P. J. Šafárik University in Košice	
<b>Faculty:</b> Faculty of Science	
<b>Course ID:</b> ÚGE/ BLS/21	<b>Course name:</b> Unmanned Aerial Vehicles
<b>Course type, scope and the method:</b> <b>Course type:</b> Lecture / Practice <b>Recommended course-load (hours):</b> <b>Per week:</b> 1 / 2 <b>Per study period:</b> 14 / 28 <b>Course method:</b>	
<b>Number of ECTS credits:</b> 4	
<b>Recommended semester/trimester of the course:</b> II. (Master)	
<b>Course level:</b>	
<b>Prerequisites:</b>	
<b>Conditions for course completion:</b> Active participation in exercises and ongoing control, which includes: Participation in field exercises at a pre-arranged time depending on the weather 1 semester thesis developed on the basis of the assignment and skills acquired during the exercises focused on processing photos from non-metering cameras, creating orthophoto mosaics and clouds points, and evaluation of data quality and its presentation 1 written test in the exam period The content of the continuous assessment is focused on practical skills and calculations within the DPZ. A student who has successfully presented a semester's work and its results and obtained an evaluation of at least grade E (min. 50 points out of 100) can apply for the exam. The content of the final exam is focused on theoretical and methodological aspects of UAS. The final evaluation of the subject is the arithmetic average of the evaluation of the semester paper and 1 final exam. Credits are awarded only to students who achieve a minimum of 50 or more out of 100 points in each part of the assessment. The evaluation scheme applies to the evaluation of both the mid-term control and the final exam: A (100-90 points), B (80-89 points), C (70-79 points), D (60-69 points), E (50-59 points) , FX (0-49 points).	
<b>Learning outcomes:</b> Knowledge: The student will gain knowledge and general overview of the conditions of the UAS flight, which includes the following areas: <ul style="list-style-type: none"><li>- Aviation law and air traffic control procedures</li><li>- General knowledge of aircraft</li><li>- Aircraft performance and flight planning</li><li>- Aeronautical meteorology</li><li>- Operating procedures</li><li>- Flight basics</li></ul> Furthermore, the student will gain knowledge about the parameters of cameras and data processing from images based on the structure-from-motion algorithm. Skills: The student will learn to prepare the UAS for flight, can plan an flight mission, can perform imaging using UAS, can process data from UAS using specialized software and can evaluate the quality of such data. Competences: The student is able to design a procedure for performing aerial measurement work using UAS based on close range photogrammetry, process and analyze photos from non-surveying cameras and evaluate the quality of data, especially orthophotomosaics and point clouds.	

<p><b>Brief outline of the course:</b></p> <p>Lectures:  Aviation law and air traffic control procedures; General knowledge of aircraft and UAS specifics; Aeronautical meteorology; Operating procedures; Flight basics and flight planning; Image processing using a structure-from-motion algorithm, Algorithms for automatic image structure recognition; evaluation of data quality obtained based on photogrammetry from UAS, UAS applications</p> <p>Exercises: part of the exercises is carried out in the field, which involves performing several types of flights using a flight plan, some exercises are carried out in professional classrooms - pre-flight preparation, data processing in specialized software, individual work and consultations for the semester assignment, presentation of the semestral work</p>
<p><b>Recommended literature:</b></p>
<p><b>Course language:</b></p>
<p><b>Notes:</b></p>
<p><b>Course assessment</b>  Total number of assessed students: 8</p>
<p>Course assessment is visible only in case of include the course to some study plan.</p>
<p><b>Provides:</b> doc. RNDr. Ján Kaňuk, PhD.</p>
<p><b>Date of last modification:</b> 19.11.2021</p>
<p><b>Approved:</b></p>