

## Course title : Advanced digital photogrammetry

Course Basic Information			
<b>Academic Unit:</b>	Faculty of Civil Engineering		
<b>Course title:</b>	Advanced digital photogrammetry		
<b>Level:</b>	Master		
<b>Course Status:</b>	Elective		
<b>Year of Study:</b>	Year 1, Semester 1		
<b>Number of Classes per Week:</b>	2+1		
<b>ECTS Credits:</b>	3 ECTS		
<b>Time /Location:</b>	According to the Timetable		
<b>Teacher:</b>	Prof. Dr. Murat Meha		
<b>Contact Details:</b>	murat.meha@uni-pr.edu		
<b>Course Description:</b>	Advanced stereoscopic imaging and epipolar geometry; Bundle block adjustment of photogrammetric blocks; Matching techniques (Interest operators, least squares image; matching, area and feature based matching); Digital Terrain Model (DTM) extraction; Orthoimage and orthomosaic production; Accuracy assessment of photogrammetric projects and products; Visualization of photogrammetric products		
<b>Course Goals:</b>	Main goal of this course is to achieve knowledge on satisfied techniques which are currently applied in digital photogrammetry.		
<b>Expected Learning Outcomes:</b>	After this course, students will be able to understand sophisticated techniques for extracting reliable information from imaging that cover each other in photogrammetric project.		
Student Workload (should be in compliance with student's Learning Outcomes)			
Activity	Hours	Day/ Week	Total
Lectures	2	15	30
Theory/ Lab Work/Exercises	1	15	15
Practical Work			
Consultations with the teacher	5	1	5
Field Work			
Test, seminar paper			
Homework			
Self-study (library or home)	1	10	10
Preparation for final exam			
Assessment time (test, quiz, final exam)			
Projects, presentations, etc.	1	15	15
<b>Total</b>			<b>75</b>

<b>Teaching Methods:</b>	<ul style="list-style-type: none"> <li>- <i>Lecture</i></li> <li>- <i>Discussion during lectures</i></li> <li>- <i>Exercises</i></li> <li>- <i>Work in group</i></li> </ul>
<b>Assessment Methods:</b>	<p>In evaluation, the percentage of the attendance of each partial evaluation in the final evaluation must be determined. One of the ways of evaluation would be:</p> <p>First Evaluation: 15%  Second Evaluation: 15%  Homework or other engagement: 10%  Attendance 5%  Final Exam 55%  Total 100%</p>
<b>Primary Literature:</b>	<p>1) <i>MichelKasser, YvesEgels, DigitalPhotogrammetry, by Taylor&amp;Francis,</i>  2) <i>Fotogrametria, KarlKraus (translated in albanianNamik Kopliku), 2011</i></p>
<b>Additional Literature:</b>	

<b>Designed teaching plan</b>	
<b>Week</b>	<b>Title of the Lecture</b>
<b>Week 1:</b>	Introduction to digital photogrammetry
<b>Week 2:</b>	Coordinate systems in photogrammetry – cartographic projections, datum, conversions
<b>Week 3:</b>	Advanced stereoscopic images and epipolar geometry
<b>Week 4:</b>	Regulation of blocked package of photogrammetry
<b>Week 5:</b>	Adaption of techniques (interest operators, images of least squares, adaption, adaption based on zone and features)
<b>Week 6:</b>	Creation of digital terrain model
<b>Week 7:</b>	Production of orthophotos and ortho mosaic
<b>Week 8:</b>	Evaluation of projects accuracy and photogrammetric production
<b>Week 9:</b>	Graphical representation of photogrammetric production
<b>Week 10:</b>	Geometric accuracy of ortho images
<b>Week 11:</b>	Mathematical models of aerial imaging geometry
<b>Week 12:</b>	Application of stereo photography in collecting information for objects
<b>Week 13:</b>	Image and model orientation, area and height measurement of model, reconstruction of objects in 3 dimensional
<b>Week 14:</b>	Measurements of images in range
<b>Week 15:</b>	Integration with GIS and CAD systems

<b>Academic Policies and Code of Conduct</b>
<p><i>We start and finish class on time.</i>  <i>Tools used during class must be cleaned and stored away at the end of class.</i>  <i>Mobile/smart phones, and other electronic devices (e.g. iPods) must be turned off (or on vibrate)</i></p>

*and hidden from view during class time.*

*Laptop and tablet computers are allowed for quiet use only; other activities such as checking personal e-mail or browsing the Internet are prohibited.*

**Note | If a student has more than 3 class assignments evaluated below 50% he/she loses the right on taking the final exam. Evaluation is done from 0-100 %.**