Syllabus

Photogrammetry and Remote Sensing

faculty	**Field of study:**	Photogrammetry and Remote Sensing
	Specialisation:	
	Level of study:	
	System of education:	

Proszę wpisać propozycje semestru (semestrów) w których przedmiot powinien być realizowany.

Course obligatory / optional				**ECTS points**: 6			
Semester	No. of hours	L	**C**	P	Lab	Seminar	Completion/Exam
Propozycja 1	45	30			15		C + E
Propozycja 2							C + E

Course content (Lecture)
Fall semester Electromagnetic radiation (EMR). Interaction between EMR and earth surface. Kirhoff and Wien laws. Color composition. Airborne image. Image analysis and interpretation. Photointerpretation features (brightness, contrast, resolution, stereoscopy). Photointerpretation key. High resolution satellite images: IKONOS, QUICKBIRD. Multispectral registration. Spectral curves. Atmospheric windows. Interaction EMR in atmosphere. Active and passive remote sensing techniques. Analogue and digital image characteristic. Image histogram. Image enhancement. Color composite. IKONOS. LANDSAT. Sensors, satellites, image processing, algebra, albedo and temperature calculation. Image classification. Image as a projective transformation, deformations on the image, terrain coordinates calculation. Autographs. Digital Elevation Models. Ortophotomap generation. Applications of remote sensing and photogrammetry

Course content (Classes)
Fall semester Spring semester

Course content (Project)
Fall semester Spring semester
Course content (Laboratory)
Fall semester Photointerpretaion of remote sensing image. Suitability of airborne images, photointerpretation using screen digitalization. Digital image, histogram, contrast enhancement, color composite generation. Spectral curves, backgrounds of image classification. Supervised classification. Thermovision. Image as a projective transformation, image deformations analysis. Stereoscopy. Mapping using autograph. Stereoscopic data collection for DTM generation. DTM visualization, slope, aspect generation, illumination simulations.

Course content (Seminar)
Fall semester Spring semester

References (Basic):
1. Canada Centre for Remote Sensing, http://ccrs.nrcan.gc.ca/index_e.php
2. Short N. Remote Sensing Tutorial http://rst.gsfc.nasa.gov/
3. Landsat Handbook, http://landsathandbook.gsfc.nasa.gov/handbook/handbook_toc.html

References (Additional):
4. Jensen J. R.: Remote Sensing of the Environment. An Earth Resource Perspective. Prentice Hall, 2000.
5. Lillesand T.M., Kiefer R.W.: Remote Sensing and Image Interpretation. John Wiley & Sons, 2004.
6. http://earthexplorer.usgs.gov

Expected learning outcome:	Student gets know: airborne and satellite images, image processing, including automatic image classification. He/she will be able to use remote sensing images in basic environmental application and will be suspicious of limitation and opportunities in airborne and satellite images application.
Language of instruction:	English
ERASMUS subject code:	
Prerequisites:	
Assessment method:	Pass of laboratory projects, exam
Unit:	
Lecturer:	Dr hab. inż. Beata Hejmanowska, prof. AGH
Lecturer (Project / Laboratory):	Dr inż Wojciech Drzewiecki
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