MODULE HANDBOOK

ADVANCED REMOTE SENSING

Module/Course Title	Student Workload	Credits	Semester	Frequency	Duration
8720200207	2 CU X 16 X 170'= 90,6618	2	4th	28 CU	14 x meetings

	types of courses	contact hours	independent study	structured study	class size
1	lectures practicum	(2cu x 1,59 ects) x{(50:170')x 28,51 workhours= 26,64	(2cu x 1,59 ects) x{(60:170')x 28,51 workhours= 31,96	(2cu x 1,59 ects) x{(60:170')x 28,51 workhours= 31,96	32

2	**Prerequisites for participation (if applicable)** Pass the Basic Remote Sensing course
3	**Program Learning Outcomes (PLO)**
	PLO 2 Able to analyze regional and zoning characteristics (regionalization) in the context of resources and disasters based on the principles and approach of Geography to support sustainable development
	PLO 5 Able to demonstrate independent and collaborative performance that produces quality and measurable results
	PLO 8 Able to formulate, process, analyze data, and present geosphere information, both physical and human aspects by using geospatial technology for geography learning and research;
	PLO 11 demonstrate a responsible attitude towards work in their field of expertise independently
	Course Learning Outcome (CLO) **1.** Able to analyze regional and zoning characteristics (regionalization) in the context of resources and disasters based on the principles and approach of Geography to support sustainable development in East Java especially in own regency area. **2.** Able to demonstrate independent and collaborative work in group discussion and terestrial measurement. **3.** Able to formulate, process, analyze data, and present the spatial problem in learning and research **4.** Able to demonstrate a responsible attitude towards work in their field of expertise independently in own regency area related to disasters, erosion, and others
4	**Subject aims/Content** 1. image correction, restoration and calibration, 2. image sharpening process,

	3. test the accuracy of image interpretation, 4. spectral transformation of images, 5. correction of data and topographic values. 6. Digital image interpretation
	Teaching methods Project Based Learning, Self Direction Learning, Small Group Discussion
	Assessment Methods Portofolio, paper test, demonstration test
	This module/course is used in the following study programme/s as well Teaching Materials : Advanced Remote Sensing, Applied Remote Sensing
	Responsibility for module/course **Other information** 1. Adams J.B., Gillespie A.R., 2006, ***Remote Sensing of Landscape with Spectral Images – A Physical Modeling Approach***, Cambridge University Press, New York. 2. Alexakis D.D., Hadjimitsis, D.G., Agapiou, A., 2013. ***Integrated use of remote sensing, GIS, and precipitation data for the assessment of soil erosion rate in the catchment area of "Yalias" in Cyprus***. Atmospheric Research. DOI. 10.1016/j.atmosres.2013.02.013. 3. Borengasserm, M., Hungate, W., Watkins, R., 2008. ***Hyperspectral Remote Sensing – Principles and Applications***. CRC Press. New York. 4. Chang, H., Li, X., Ge., L., 2010. ***Assessment of SRTM, ACE2 and ASTER GDEM using RTK-GPS***. http://www.gmat.unsw.edu.au/snap/publications/chang_etal2010a.pdf. 5. Danoedoro P., 2012, ***Pengantar Penginderaan Jauh Digital***, Penerbit Andi, Yogyakarta. 6. Elachi, C., Zyl J.V., 2006, ***Introduction to the Phisics and Techniques of Remote Sensing***, Second Edition, John Wiley & Sons, New Jersey. 7. Horning, N., Robinson, J.A., Sterling, E.J., Turner, W., Spector, S., 2010. ***Remote Sensing for Ecology and Conservation***. Oxford University Press, New York. 8. Kalacska,M., Sanchez-Azofeifa, G., A., 2008. ***Hyperspectral Remote Sensing Of Tropical And Subtropical Forests***. Taylor & Francis Group, LLC, New York 9. Newman, M.E., McLaren, K.P., Wilson, B.S., 2011. ***Use of Object-oriented classification and fragmentation analysis (1985-2008) to identify important areas for conservation in Cockpit County Jamaica***. Environ Monit Assess 172:391-406. 10. Papandaki, E.S., Mertikas, S.P., Sarris, A., 2011. ***Identification of lineaments with possible structural origin using aster images and DEM derided products in western Crete, Greece***. EARSel eProceedings 10, 1/2011. 11. Rahman, M. R., Shi, Z.H., Chongfa, C., 2009. ***Soil erosion hazard evaluation-an integrated use of remote sensing, GIS, and statistical approaches with biophysiological parameters towards management strategies.*** Ecological Modelling. DOI. 10.1016/j.ecomodel.2009.04.004 12. Reuter, H.I., Nelson, A., Strobl., P., Mehl, W., Jarvis, A., 2009, ***A first assessment of ASTER GDEM tiles for absolute accuracy, relative accuracy and terrain parameters***. IEEE. DOI: 978-1-4244-3395-7

13. Shaban, A., 2009. ***Identifying ring geomorphic features in Lebanon using ASTER and Landsat 7 ETM+ images***. International Journal of Remote Sensing. Vol. 30, No. 5, 10 March 2009, 1127–1140. DOI: 10.1080/01431160802395268.
14. Siart, C., Bubenzer, O., Eitel B., 2009. ***Combining digital elevation dat. (SRTM/ASTER), high resolution satellite imagery (Quickbird) and GIS for geomorphological mapping: a multi-component case study on Mediteranean karst in Central Crete***. Geomorphology 112: 106-121. DOI 10.1016/j.geomorph.2009.05.010.
15. Suharyadi, 2012. ***Interpretasi hibrida citra satelit resolusi spasial menengah untuk kajian densifikasi bangunan di daerah perkotaan Yogyakarta***. Desertasi. Fakultas Geografi. Universitas Gadjah Mada. Yogyakarta.
16. Tam, V.T., Batelaan, O., 2011. ***A multi-analysis remote-sensing approach for mapping groundwater resources in the karstic Meo Vac Valley, Vietnam.*** Hydrogeology Journal. 19: 275-287. DOI. 10.1007/s10040-010-0684-z
17. The Yale Center for Earth Observation. 2010. ***Obtaining and Processing MODIS Data***. http://www.yale.edu/ceo/Documentation/MODIS.pdf
18. The Yale Center for Earth Observation. 2012. ***ASTER Image***. http://www.yale.edu/ceo/Documentation/ASTER.pdf
19. Wiegand, C., Rutzinger, M., Heinrich, K., Geitner, C., 2013. ***Automated extraction of shallow erosion area based on multi-temporal ortho-imagery***. Remote Sensing. 5: 2292-2307. DOI: 10.3390/rs5052292.
20. Yang Q., Xie, Y., Li, W., Jiang, Z., Li., H., Qin, X., 2013. ***Assesing soil erosion risk in karst area using fuzzy modelling and method of the analytical hierarchy process***. Environ. Earth Sci. DOI 10.1007/s12665-013-2432-8.
21. Zhang M., Wang K., Zhang C., Chen H., Liu H., Yue Y., Luffman I., Qi X., 2011, ***Using the Radial Basis Function Network Model to Assess Rocky Desertification in Nortwest Guangxi China***, Environ. Earth Sci. 62:69-76, DOI 101007/s12665-010-0498-2.
22. Zhao, S., Cheng, W., Zhou, C., Chen, X., Zhang, S., Zhou, Z., Liu, H., Chai, H., 2011. ***Accuracy assessment of the ASTER GDEM and SRTM DEM***: an example in the Loess Plateau and North China Plain of China. International Journal of Remote Sensing. p 1-13. ISSN 1366-5901.