MODULE HANDBOOK

ADVANCED GIS

Module/Course Title	Student Workload	Credits	Semester	Frequency	Duration
8720202156	**2 CU X 16 X 170'= 90,6618**	2	3ᵗʰ	28 CU	14 x meetings

1	**types of courses** • lectures • practicum	**contact hours** (2cu x 1,59 ects) x{(50:170')x 28,51 workhours= 26,64	**independent study** (2cu x 1,59 ects) x{(60:170')x 28,51 workhours= 31,96	**structured study** (2cu x 1,59 ects) x{(60:170')x 28,51 workhours= 31,96	**class size** 32
2	**Prerequisites for participation (if applicable)** Pass the Basic GIS 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. Concepts of distance, area and volume
	    2. Query and Buffer Analysis				

	3. Classification and spatial statistics 4. 3D Models 5. Spatial Autocorrelation 6. Spatial Metric 7. Multi Criteria Decision Making 8. Geoportal
	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 Geographics Information System
	Responsibility for module/course **Other information** 1. Agosto, E., 2013. Vector–raster server-side analysis: a PostGI S benchmark, Appl Geomat. Vol. 5. Hal. 177–184. DOI 10.1007/s12518-013-0104-x 2. Alesheikh, A.A., Helali, H., Behroz, H.A., 2002. Web GIS: Technologies and its applications. Symposium on Geospatial Theory, Processing and Applications. Ottawa. 3. Alexis, S., Montero, L.G.G., Hernandez J., Abril, A.G., Pastor, J., 2010. Soil fertility and GIS raster models for tropical agroforestry planning in economically depressed and contaminated Caribbean areas (coffee and kidney bean plantations). Agroforest Syst . Vol. 79. Hal. 381–391. DOI 10.1007/s10457- 009-9263-5 4. Alhasanat, M.B., Kabir, S., Hussin, W.M.A.W., Eddison, E., 2012. Spatial analysis of a historical phenomenon: using GIS to demonstrate the strategic placement of Umayyad desert palaces. GeoJournal. Vol. 77. Hal. 343–359. DOI 10.1007/s10708-010-9392-4 84 5. Alkobaisi, S., Bae, W.D., Vojtechovsky, P., Narayanappa, S., 2012. An interactive framework for spatial joins: a statistical approach to data analysis in GIS. Geoinformatica Vol. 16. Hal. 329– 355. DOI 10.1007/s10707-011-0134-7 Ates, M., 2013. Geography Teachers' Perspectives towards Geography Education with Geographic Information Systems (GIS). International Journal of Innovative Research in Science, Engineering and Technology. Vol. 2, Issue 10. 6. Basnet, B.B., Apan, A.A., Raine, S.R., 2001. Selecting Suitable Sites for Animal Waste Application Using a Raster GIS. Environmental Management. Vol. 28, No. 4, hal. 519–531 DOI: 10.1007/s002670010241. 7. Bednarz, S.W., 2004. Geographic information systems: A tool to support geography and environmental education?, GeoJournal. Vol. 60. Hal. 191– 199, 8. Bortoloti, F.D., Junior, R.M.C., Araujo, L.C., Morais, M.G.B., 2015. Preliminary landslide susceptibility zonation using GIS-based fuzzy logic in Vito´ria, Brazil. Environ Earth Sci. Vol. 74. Hal. 2125–2141. DOI 10.1007/s12665-015- 4200-6. 9. Branch, R.M., 2009. Instructional Design: The ADDIE Approach. Springer. New York. DOI 10.1007/978-0-387-09506-6. 10. Cheremia, E., Tokareva, N., Rishe, N., 2012. Application of advance GIS technologies to environmental monitoring. NSF Supplement to IIP-0829576

for collaboration with I/UCRC- CAKE's Russian Site. State Research Center of the Russian Federation

11. Delamater, P.L., Messina, J.P., Shortridge, A.M., Grady, S.C., 2012. Measuring geographic access to health care: raster and network-based methods. . International Journal of Health Geographics, Vol. 11. Hal. 15. Esri. 2012. GIS in Education: across campuses, inside facilities. Esri. NewYork Hamzeh,

12. M., Abbaspour, R.A., Davalou, R., 2015. Raster-based outranking method: a new approach for municipal solid waste landfill (MSW) siting. Environ. Sci. Pollut. Res. Vol. 22. Hal. 12511– 12524. DOI 10.1007/s11356-015-4485-8.

13. Isman, A., 2011. Instructional Design In Education. The Turkish Online Journal of Educational Technology. Vol. 10, Issue I. Hal. 136 – 142.

14. Khan, M.N., Odman, M.T., Karimi, H., Goodchild, M., 2000. Developing and integrating advanced GIS Techniques in adaptive grid air quality model to reduce uncertainty. 4th International Conference on Integrating GIS and Environmental Modeling: Problems, Prospects and Research Needs. Alberta – Canada. 85

15. Kilbrink, N., Bjurulf, V., Blomberg, I., Heidkamp, A., Hollsten, A.N., 2014. Learning specific content in technology education: learning study as a collaborative method in Swedish preschool class using hands-on material, Int J Technol Des Educ, Vol. 24. Hal. 241–259 DOI 10.1007/s10798-013-9258-4

16. Li, L., Yang, Y., Wang, H., Dong, J., Zao, Y., He, J., 2011. Spatial Statistical Analysis in Cow Disease Monitoring Based on GIS, dalam Li, D., Liu, Y., Chen, Y., (Ed.), 2011, CCTA, Part II, IFIP AICT Vol. 345, hal. 561–566. Mahdjoubi, D., 2009. Four Types of R&D. Lecturing

17. Materials. St. Edward's University, Stavangar - Norway.

18. McElvany, N., Schroeder, S., Baumert, J., Schnotz, W., Horz, H., Ullrich, M., 2011. Cognitively demanding learning materials with texts and instructional pictures: teachers' diagnostic skills, pedagogical beliefs and motivation. Eur J Psychol Educ, Vol. 27. Hal. 403-420. DOI 10.1007/s10212-011-0078-1

19. Ojanen, V., dan Vuola, O., 2003. Categorizing the Measures and Evaluation Methods of R&D Performance – A State-of-the-art Review on R&D Performance Analysis, Working Papers 16, Lappeenranta University of Technology, Lappeenranta.

20. Prince, M., dan Felder, R.M., 2006. Inductive Teaching And Learning Methods: Definitions, Comparisons, And Research Bases, J. Engr. Education, Vol. 95(2), hal. 123–138

21. Rao, S., dan Vinay, S., 2009. Choosing the right GIS framework for an informed Enterprise Web GIS Solution. CIESIN, Columbia University & NASA. New York, USA

22. Simsek. A., 2012. Locus of Instructional Control, Learner Control. Dalam: Seel, N., 2012. Encyclopedia of the Sciences of Learning. DOI 10.1007/978-1-4419- 1428-6.

23. Singh, P.S., Chuti, D., Sudhakar, S., 2012. Development of a Web Based GIS Application for Spatial Natural Resources Information System Using Effective Open Source Software and Standards. Journal of Geographic Information System, Vol. 4, hal. 261-266.

24. Sudaryanti, Kusrahmadi, S.D., 2011. Pengembangan model bahan ajar pendidikan lingkungan hidup berbasis lokal mata pelajaran ilmu pengetahuan sosial. Universitas Negeri Yogyakarta. Yogyakarta.

25. UNESCO. 2014 . Guide to Conducting an R&D Survey: For countries starting to measure research and experimental development. UNESCO Institute for Statistics. Montreal