USING GEODATA *for* NATURAL RESOURCE MANAGEMENT: A Practical Workshop

Trainer: Dr. Ammar Rafiei Emam

Organizers: Professor Farzanegan (FB02/CNMS) & Professor Opp (FB19)

Date: 8th and 9th of November 2019 (Friday & Saturday: 09:00 – 12:00 ==== 13:00 – 17:00)

Place: CNMS, Deutschhausstr. 12, PC Room 00A19

Evaluation/Grading (for eligible participants who have planned for 3 ECTS):

- Implementation and submission of an empirical project (will be discussed during the workshop)
- Submission deadline: 30. 01.2020
- Course completion certificates are available upon request.

Capacity: 18 participants (FB02/19/CNMS). Registration is necessary (deadline 30.10.2019). Please send your application together with your CV to narem@uni-marburg.de

Course Description

- This workshop introduces the basic concepts of GIS and geodatabase and its applications through the use of ArcGIS. The course includes both theory and practice. Students will apply GIS tools within small GIS projects during the workshop.
- GIS technology has broad applications not only in engineering and environmental studies but also in social and economy sciences. Examples include wildlife habitat study, urban and regional planning, disaster management, agriculture and forestry, emergency management, transportation planning, and many more. This workshop will introduce a few selected cases of GIS application in different disciplines related to socioeconomic and environmental studies.

Workshop outcomes

- By completing this workshop, students will learn how to build a geodatabase, how to load data into GIS, how to analyze data using "spatial analyst tools", and above all how to run a project in a GIS environment.

Literatures:

Geographic Information Systems and Science (4th Edition)

Authors: Paul A. Longley, Michael F. Goodchild, David J. Maguire, David W. Rhind

Publisher: Wiley (March 2015, ©2016)

ISBN-13: 978-1118676950; ISBN-10: 1118676955

Geographische Informationssysteme (GIS)

Authors: Martin Kappas

Publisher: Westermann

ISBN-13: 9783141603620; ISBN-10: 3141603626

An introduction to geographical information systems.

Authors: Heywood, D Ian; Cornelius, S.; Carver, S.

3. ed. Harlow: Pearson Prentice Hall (2006)

Introductory Geographic Information Systems.

Authors: Jensen, J. R. & Jensen, R. R.

Pearson Prentice Hall, (2013)

Online literature: https://www.esri.com/en-us/what-is-gis/get-started

Workshop contents:

A. Friday (8 November):

1. Introduction – Theory: Includes definition, principle of GIS, Functions of GIS, Components of GIS, Data Types in GIS [9:00-10:00]

2- Introduction to ArcGIS – ArcMap plus Data management (includes loading data, scales, online help) [10:00-12:00]

3- Analyze of vector data (include query functions, making a map, etc.) [13:00-14:30]

4-Geometric analysis methods based on vector data-project (Spatial Analyst tools) [14:45-17:00]

B. Saturday (9 November):

5-Flood risk and flood management: Flooding is identified as the most frequent type of natural disaster that affects lives and property in vulnerable areas. The aim of this exercise is to evaluate the flood risk due to an extreme event by using flood hazard and flood vulnerability data in GIS environment. [9:00-12:00]

6- Lake Urmia (Iran) surface water shrinkage and its social-economic impacts [in this exercise the students will learn the change detection analysis using two satellite dataset during a period of 20 years, and to understand how mismanagements resulted in environmental issues in the area. During this exercise the students will learn the basic concept of remote sensing, and raster data format, and will learn how to analyze remotely sensed data in GIS environment. [13:00- 16:00]

7-Description of the final Project [16:00-17:00]

The workshop is supported by UMR 2027 Project.

Short Biography of Trainer

Dr. Ammar Rafiei Emam completed his PhD at the George-August-University of Goettingen in 2015. This was followed by a three years post-doctoral research at the Department of Cartography, GIS and Remote Sensing of George-August-University of Goettingen and one-year post-doctoral research at the institute for the Advanced Study of Sustainability (IAS) of United Nations University, Tokyo, Japan. His research included studies on hydrology, water resources management, watershed management, flooding, hydrological modeling, climate change, land degradation and desertification (Modeling and Monitoring), and remote sensing and GIS. Prior to that, Dr. Rafiei Emam completed his Master degree at the University of Tehran in 2003. He worked as a research fellow at the Research Institute of Forests and Rangeland (RIFR) from 2003 to 2008, after which he joined the department of economic studies at Agricultural bank of Iran for two years. Currently he served a position of hydrologist at the Uniper Energy Company.