

## **HGO4940 V21 Advanced Geographic Information Systems**

### **Text book**

Lloyd, C.D. *Spatial data analysis : an introduction for GIS users.* Oxford University Press; 2010.

### **1. Spatial is special**

Lloyd, C.D. *Spatial data analysis : an introduction for GIS users.* Ch.1,2. Oxford University Press; 2010.

Goodchild MF. Scale in GIS: An overview. *Geomorphology (Amsterdam, Netherlands).* 2011;130(1-2):5–9. doi:10.1016/j.geomorph.2010.10.004

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Goodchild MF. Twenty years of progress: GIScience in 2010. *Journal of spatial information science.* 2010;(1):3–20. doi:10.5311/JOSIS.2010.1.2

### **2. GIS fundamentals**

ESRI. An overview of the Analysis toolbox. <https://pro.arcgis.com/en/pro-app/latest/tool-reference/analysis/an-overview-of-the-analysis-toolbox.htm>

ESRI. An overview of the Joins and Relates toolset. <https://pro.arcgis.com/en/pro-app/latest/tool-reference/data-management/an-overview-of-the-joins-toolset.htm>

### **32. GIS-based multi-criteria analysis**

Lloyd, C.D. *Spatial data analysis : an introduction for GIS users.* Ch.5,10. Oxford University Press; 2010.

Meng Y, Malczewski J. A GIS-based Multicriteria Decision Making Approach for Evaluating Accessibility to Public Parks in Calgary, Alberta. *Human geographies.* 2015;9(1):29–41. doi:10.5719/hgeo.2015.91.3

Sánchez-Lozano JM, Teruel-Solano J, Soto-Elvira PL, Socorro García-Cascales M. Geographical Information Systems (GIS) and Multi-Criteria Decision Making (MCDM) methods for the evaluation of solar farms locations: Case study in south-eastern Spain. *Renewable & sustainable energy reviews.* 2013;24:544–556. doi:10.1016/j.rser.2013.03.019

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doi:10.1016/j.jtrangeo.2014.01.014

ESRI. What is ModelBuilder? <https://pro.arcgis.com/en/pro-app/latest/help/analysis/geoprocessing/modelbuilder/what-is-modelbuilder-.htm>

ESRI. Use ModelBuilder. <https://pro.arcgis.com/en/pro-app/latest/help/analysis/geoprocessing/modelbuilder/modelbuilder-quick-tour.htm>

ESRI. Iterators. <https://pro.arcgis.com/en/pro-app/latest/help/analysis/geoprocessing/modelbuilder/iterators-for-looping.htm>

ESRI. If-then-else branching and logical tools. <https://pro.arcgis.com/en/pro-app/latest/help/analysis/geoprocessing/modelbuilder/if-then-else-branching-and-logical-tools.htm>

### **34. Advanced cartography: Bivariate maps**

Lloyd, C.D. *Spatial data analysis : an introduction for GIS users*. Ch.7, 9. Oxford University Press; 2010.

Mennis J. Dasymetric Mapping for Estimating Population in Small Areas. *Geography compass*. 2009;3(2):727–745. doi:10.1111/j.1749-8198.2009.00220.x

Comber, A. and Zeng, W. Spatial interpolation using areal features: A review of methods and opportunities using new forms of data with coded illustrations. *Geography compass*. 2019; 13(10). doi.org/10.1111/gec3.12465

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## **45. Network analysis: Accessibility**

Lloyd, C.D. *Spatial data analysis : an introduction for GIS users.* Ch.6. Oxford University Press; 2010.

Golub A, Martens K. Using principles of justice to assess the modal equity of regional transportation plans. *Journal of transport geography.* 2014;41:10–20.  
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## **56. Spatial autocorrelation and intro to R**

Lloyd, C.D. *Spatial data analysis : an introduction for GIS users.* Ch.4. Oxford University Press; 2010.

Anselin L. Local Indicators of Spatial Association-LISA. *Geographical analysis.* 2010;27(2):93–115. doi:10.1111/j.1538-4632.1995.tb00338.x

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Lovelace R, Nowosad J, Muenchow J. *Geocomputation with R.* Chapman and Hall/CRC Press; 2019. <http://eprints.whiterose.ac.uk/141673>

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## **67. Spatial regression**

Lloyd, C.D. *Spatial data analysis : an introduction for GIS users.* Ch.3,8. Oxford University Press; 2010.

LeSage JP. An Introduction to Spatial Econometrics. *Revue d'économie industrielle.* 2008;(123):19–44. doi:10.4000/rei.3887

## **7. 3D Modelling**

Machete, R. Falcao, A.P. Gomes, M.G. and Rodrigues, A.M. The use of 3D GIS to analyse the influence of urban context on buildings' solar energy potential. *Energy and Buildings.* 2018: 177:290-302. doi.org/10.1016/j.enbuild.2018.07.064

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