***Spatial Analysis and Spatial Statistics for Research in GIS, Geography and Land Management***

**Special Lecture Series at Henan University, May and September 2012**

**Dr. Ron Briggs**

**Professor Emeritus**

**The University of Texas at Dallas**

**Goals for Students**

* Improve your research by explaining *standard research practices and procedures* in western countries
* Expand your *understanding of English* by talking in English about some GIS concepts you already know, and some that you don’t
* Enhance your understanding of Spatial Analysis in general, and *Spatial Statistics* in particular
* Provide *exposure to U.S. data and associated geographical concepts* (State Plane Coordinate System, Metropolitan Statistical Areas, census tracts, etc.)

**Week 1 (May 7)**

1. Research Methodology: The Central Role of Goals and Objectives. (1Intro.ppt: 37 slides)

2. Spatial Analysis: Concepts and Issues (2spatanal.ppt: 42 slides)

3. Spatial Data: What is special about spatial data? (3spatdata.ppt: 33 slides)

**Week 2 (May 14)**

4. Standard Statistics and Spatial Statistics: Differences and Similarities (5CentroStat.ppt: 61 slides)

5. Descriptive Spatial Statistics for Points and Polygons

6. Inferential Spatial Statistics: Standard and spatial (6InfStat.ppt: 34 slides)

**Week 3 (May 21)**

7. Point Pattern Analysis: Concepts and Tests for Clustering and Dispersion (7.1PointPat.ppt: 44 slides)

8. Point Pattern Analysis: Applied Point Pattern Analysis (7.2PointPat.ppt: 53 slides)

9. Conclusion and preview of September classes: Analyzing polygons and surfaces

**Week 4 (Fall- 1st week)**

10. Review of May sessions (Point Pattern Analysis) and Intro to fall (Polygons and Surfaces)

11. Spatial Autocorrelation: concept and implementation (9SAconcepts.ppt 42 slides)

12. Global Measures of Spatial Autocorrelation: Moran’s I and Geary’s C (10SAglobal.ppt 36 slides)

**Week 5(Fall-2nd week)**

13. Local measures of Spatial Association: Anselin’s LISA and others (11SALocal.ppt: 28 slides)

14. Using GeoDA for measuring spatial autocorrelation (12SADemo.ppt: 30 slides)

15. Regression and Correlation: standard approach (13SpatReg.ppt 64 slides)

**Week 6 (Fall-3rd week)**

16. Spatial Regression

17. Using GeoDA for standard and spatial regression (15Regdemo.ppt 30 slides)

18. Analyzing surfaces: Concepts and Trend Surface Analysis (18Surfaces.ppt: 54 slides)

**Week 7 (Fall-4th week)**

19. Analyzing surfaces: IDW and Kriging

18. Research at UT-Dallas: spatial statistics in practice. (16UTDRes.ppt 49 slides)

19. A taste of other topics: cluster creation, network analysis, interaction data

**Software to be Used (training will be incorporated into the lecture series)**

*ArcGIS* from ESRI, Inc. (licensed)

*GeoDA* by Luc Anselin, Arizona State University (freely available)

*Crime Stat III* by Ned Levine, National Institute for Criminal Justice (freely available)

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