

URP 6272 section 4891

2017 Spring Course Objective & Program:

This course is intended to provide students with and understanding of geostatistical analysis and spatial modeling techniques. The course also teaches students how to development GIS of models using the ArcGIS ModelBuilder environment. The course supports the department's mission as part of the "Planning Information Technologies" specialization and builds advanced knowledge skills within that specialization. The course provides analysis skills that allow planning students to achieve in the area of spatial statistical analysis as required for the hypothesis testing, cluster and pattern analysis, and geospatial stochastic surface development and prediction modeling. In addition effort has been made to include examples and assignments that provide opportunity to utilize statistical analysis as a problem solving/analysis methodology for environmental decision making, environmental justice, and in support of species and habitat biodiversity and sustainability. The class will be taught from lecture notes and assigned readings. Course lectures (the slides) will be provided in PDF format on shared disk location (or by email) for every student registered in the course. Students will be able to access the PDF files for viewing during class and for download as a study mechanism for homework and examinations.

Course Information:

Instructor:	Paul Zwick, Ph.D., Professor and Interim Associate Dean 431B Architecture Building Phone: 352-294-1483 Email: pdzwick@ufl.edu ;
Teaching Assistant:	Leilei Duan dll1989@ufl.edu , ARCH #162
Class meeting times:	Monday 4 th and 5 th periods; Wednesday 4 th period.
Classroom:	Arch 411
Credits:	Three credits
Prerequisites:	URP 6270, or instructor approval
Software:	ArcGIS Student Version 10.3.1, can be applied at http://www.geoplan.ufl.edu/software/student_license.php
Attendance:	Mandatory, on time
References & Resources:	See References & Resources section
Course format:	All material will be posted on the Canvas, e-Learning system. System entry & support can be accessed at: https://lss.at.ufl.edu/ .

Expectations & Course Grading:

Homework Assignments: Will determine 100% of numeric grade scale for this course

I expect that all graduate students should be able to accomplish the basic requirements for the course (represented by a "B" grade). I will not hesitate to mark lower when a student does not meet the expectation of adequately showing understanding of the material. "A" grades require performance beyond the minimum or average -- e.g., quality, depth, and synthesis of ideas.

University of Florida grading scale

Letter Grade	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E	WF	I	NG	S-U
% Range	>93	90-92	87-89	83-86	80-82	77-79	73-76	70-72	67-69	63-66	60-62	<60				
Grade Point	4.0	3.67	3.33	3.0	2.67	2.33	2.0	1.67	1.33	1.0	.67	0	0	0	0	0

Non-Punitive Grades (not counted in GPA)

- W Withdrew
- U Unsatisfactory
- H Deferred
- N No grade reported
- I Incomplete

Failing Grades (counted in GPA)

- E Failure
- WF Withdrew failing
- NG No grade reported
- I Incomplete

Academic Honesty

University Policy on Academic Misconduct: Academic honesty and integrity are fundamental values of the University community. Students should be sure that they understand the UF Student Honor Code at <https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>

Disabilities

University Policy on Accommodating Students with Disabilities: Students requesting accommodation for disabilities must first register with the Dean of Students Office (<http://www.dso.ufl.edu/drc/>). The Dean of Students Office will provide documentation to the student who must then provide this documentation to the instructor when requesting accommodation. You must submit this documentation prior to submitting assignments or taking the quizzes or exams. Accommodations are not retroactive, therefore, students should contact the office as soon as possible in the term for which they are seeking accommodations.

College of Design, Construction and Planning – Spray Painting Policy:

Spray painting, or the use of any other sort of aerosol spray, is not allowed in the Architecture Building, Rinker Hall and in Fine Arts C, except within the spray booth found in Room 211 of Fine Arts C. Students found in violation of this policy will be referred to the Dean of Students for disciplinary action.

References & Resources:

None required other readings as assigned.

In written work, the format of all references should follow the format of used by the Journal of the American Planning Association (JAPA) and based upon Publication Manual of the American Psychological Association, Sixth Edition (2010), and the Chicago Manual of Style, 15th Edition. This method is called the parenthetical citations – reference list style or the reference list style. Citations should appear in the text as follows: (Levinson & Krizek, 2008) when using an idea from the text; or (Levinson & Krizek, 2008,p. 103) when using a specific quote on the indicated page (in this case, page 103). A good source of information on the APA format can be found on the website of the Writing Center at the University of Wisconsin – Madison: <http://www.wisc.edu/writing/Handbook/DocAPA.html> and under the “Frequently Asked Questions” about the APA Style at: <http://www.apastyle.org/learn/faqs/index.aspx?imw=Y>. Students from other departments may use a commonly accepted format for citations from their own field.

Web Resources

- University of Florida (Library homepage): <http://www.uflib.ufl.edu>
- VPN connection (Off campus access): <https://connect.ufl.edu/it/wiki/Pages/glvpn.aspx>
- Library Tools and Mobile Apps (smart phones, RSS feeds, etc.): <http://www.uflib.ufl.edu/tools>

GIS data

- Florida Geographic Data Library (FGDL): <http://www.fgdl.org/>

Structure of the Course:

Week 1 & 2:	General Introduction to Course Basic <i>ModelBuilder</i> The <i>ModelBuilder</i> Environment Creating a Model in <i>ModelBuilder</i> Model Diagram Note: You will be working with ArcGIS <i>ModelBuilder</i> the entire Course. These weeks are the introductory lectures for <i>ModelBuilder</i>.
Week 3:	Exploring GIS Data for Surface Modeling With Geostatistical Analyst Histogram Analysis QQ Plots Trend Analysis Voronoi Maps General QQ Plots Semivariogram/Covariance Clouds
Week 4:	Overview of Deterministic Surface Models Inverse Distance Weighting for Surface Development Local Polynomial Surface Development Radial Base Functions for Surface Development Creating Subsets
Week 5:	Spatial Autocorrelation using Geostatistical Analyst Semivariogram Concepts Nugget, Range, Partial Sill, Sill Stationarity Isotropy and Anisotropy Creating an Empirical Semivariogram Binning to Create Data Vectors Model Selection Spatial Autocorrelation Moran's I

Week 6:	Stochastic Surface Models <ul style="list-style-type: none">OrdinaryUniversalSimpleCokriging
Week 7:	Spatial Pattern Analysis Measuring Geographic Distribution <ul style="list-style-type: none">Mean CenterMedian CenterStandard DistanceCenter FeatureCollect EventsDirectional Distribution (Standard Deviational Ellipse)
Week 8:	Spatial Statistics Analyzing Patterns <ul style="list-style-type: none">Average Nearest NeighborHigh/Low Clustering<ul style="list-style-type: none">Generate Spatial Weights MatrixConvert Spatial Weights Matrix to TableCollect Distance Band for Neighborhood CountIncremental Spatial AutocorrelationMulti-distance Spatial Cluster AnalysisSpatial Autocorrelation Moran's
Week 9:	Spatial Statistics Mapping Clusters <ul style="list-style-type: none">Cluster and Outlier Analysis (Anselin Local Moran's I)Hot Spot Analysis (Getis-Ord G_i^*)Optimized Hot Spot AnalysisSimilarity Search
Week 10-11:	Spatial Statistics Regression <ul style="list-style-type: none">Ordinary Least SquaresExploratory RegressionGeographically Weighted Regression (GWR)Generate Network Spatial Weights
Week 12:	Gravity Models
Week 13-16:	Final Project