

GEOGRAPHIC INFORMATION ANALYSIS - SYLLABUS

Course number: GGS 653
Term: Spring 2015
Class Meetings: Exploratory Hall 2103; Tuesday 7:20pm – 10:00pm
Course Web Page: <https://courses.gmu.edu>

Professor: Kevin M. Curtin, PhD
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Office: Exploratory Hall - Room 1454
Office Hours: Friday 2:00pm – 4:00pm (Jan 23 through May 8, 2015)
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Course Description

In this course students will explore existing and potential capabilities of geographic information systems in conducting spatial analysis and modeling. This course provides an intensive program of study in the use of Geographic Information Systems and Science in order to perform spatial analysis. More specifically, students are required to perform high level, academically sound research through a rigorous application of the scientific method. Additional material will broaden the students' understanding of Network Analysis, Spatial Statistical Analysis, and spatio-temporal analysis. Industry standard GIS software tools are used to apply these methods.

Required Textbook

None. A few readings may be distributed in class.

Students will perform an ongoing literature review using peer-reviewed articles of their own choosing.

Grading Policy

Lit Reviews (10)	20 points	200
Research Project (1)	500 points	500
Update 1 (100 points)		
Update 2 (150 points)		
Final submission (250 points)		
Class Participation (1)	50 points	50
Final Exam (1)	250 points	250
Total Possible Points:		1000 points

Course & Instructor Policies

Late Assignments: All Assignments are due by the start of the class period on the due date. Late assignments are accepted up to 4 days late. Literature review summaries incur a 5 point penalty per day late. Project updates incur a 25 point penalty per day late

Attendance: Attendance is expected and required

Course Pre-requisites, Co-requisites, and/or Other Restrictions

GG5 553 – Geographic Information Systems

GG5 560 – Quantitative Methods

Students are expected to display the highest possible level of academic integrity.

DATE	TOPICS	READINGS
01/20/15	Introduction; Syllabus; Class Format; Assignments What is GIS Analysis? How to Perform GIS Analysis? Literature Reviews and how to perform a literature search	
01/27/15	History of Network Data Models; The Geometric Network; Network Flow; More on project scope/format; Writing Introductions	Lit Review 1 Due
02/03/15	Centrophraphy – Review; Central Tendency on Rasters Intro Point Pattern Analysis (Quadrat / Nearest Neighbor) What should be in the Data Section?	Lit Review 2 Due
02/10/15	Moran's I Kernel Density The Lit Review Section; Project Update Discussions	Lit Review 3 Due
02/17/15	Getis-Ord G statistic; LISA statistics; Ripley's K (Multi-Distance Spatial Cluster Analysis); Model Builder	Project Update 1 Due
02/24/15	More Advanced Network Analysis in ArcGIS Network Weights Getting Network Weights from Rasters	Lit Review 4 Due
03/03/15	Network Connectivity Network Indices; Network Editing; Network Widgets Programming in ArcGIS – Network Connectivity	Lit Review 5 Due
03/10/15	SPRING BREAK – NO CLASS	
03/17/15	Linear Referencing Project Update Discussions	Lit Review 6 Due
03/24/15	GeoStatistics Interpolation: IDW, Natural Neighbor, Trend Surfaces Intro to Kriging	Lit Review 7 Due
03/31/15	Interpolation: Kriging	Project Update 2 Due
04/07/15	Time in GIS Tracking Analyst Project Discussions	Lit Review 8 Due
04/14/15	Location Science - Combinatorial Complexity Mathematical Modeling (TSP, VRP, MaxCover) Exam Review	Lit Review 9 Due
04/21/15	Project Work Period	
04/28/15	FINAL EXAM	Lit Review 10 Due
05/12/15	Final Project Due	

These descriptions and timelines are subject to change at the discretion of the Professor.