

GIS6XXX: GIS Models for Public Health

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Office hour: Tuesday 2-4pm

Course description:

This is a methodology-oriented course that focuses on designing GIS-based models to address health and health care issues. The lecture component covers a serial of topics, including: a conceptual framework, landscape epidemiology models, disease diffusion models, health accessibility, individual health behavior, and location-allocation models of health services.

This course also has a lab component to help students gain hands-on experience of applying these models with GIS tools. ArcGIS will be used as the primary GIS software.

Prerequisites:

Entry level knowledge of both statistics (STA2023, GEO3162C, or equivalent) and GIS (GIS3043 or equivalent), or the consent of the instructor

Lectures and Labs:

Week	Lecture Topics	Lab Exercises
1/6	Introduction	
1/11,13	Spatial modeling and conceptual framework	Revisit ArcGIS
1/18,20	Data sources and Basic GIS operations	Health data acquisition and join
1/25,27	Suitability models and Delphi approach	ArcGIS analysis toolbox
2/1,3	Landscape epidemiology models (I)	Suitability model for siting a new hospital
2/8,9	Landscape epidemiology models (II)	GIS model builder
2/15,17	Modeling the diffusion of diseases (I) (SIR model and Cellular Automata model)	Mapping the risk of WNV using logistic regression model
2/22,24	Modeling the diffusion of diseases (II) (Network models)	Spatial pattern analysis and 3D mapping
3/1,3	Modeling disease intervention strategies	A mini CA disease diffusion
	Spring break	
3/8,10	Accessibility to health services (Gravity model and floating catchment model)	Gravity model for hospital accessibility with ArcGIS
3/15,17	Discrete choice model for health behavior	Evaluating EMS service with GIS network analysis
3/22,24	Location-allocation model Model validation	Using GIS to validate health models
3/29,31	Advanced topics in GIS & Public health	Help session on individual project
4/5,7	Course summary	Help session on individual project
4/12, 14	Individual project presentation	No class (AAG Annual meeting)
4/19	Individual project presentation	

 **Textbook and additional readings:**

Recommended textbook:

Ellen K. Cromley and Sara L. McLafferty, 2002, *GIS and Public Health*. Guilford Press, New York

 **Grading Policies**

Items	Grade (points)
Lab Assignments	30
Annotated bibliography	10
Midterm exam	20
Individual project report	30
Final presentation	10
Total	100

The grading scale for this course consists of the standard scale, including minus grades, below:

93 - 100 = A	90 - 92 = A-	87 - 89 = B+	83 - 86 = B	80 - 82 = B-
77 - 79 = C+	73 - 76 = C	70 - 72 = C-	67 - 69 = D+	63 - 66 = D
60 - 62 = D-	Below 60 = E			

More information on current UF grading policies for assigning grade points can be accessed by the following link:

<http://www.registrar.ufl.edu/catalog/policies/regulationgrades.html>

Lab assignments: There will be 11 assignments for lab exercises, with 10 points for each assignment. The total score accounts for 30% of the final grade. The assignments should be handed in by due date. Otherwise 2 point will be deducted per day after due date. If something unexpected happens, please inform the instructor in advance.

Annotated bibliography: Each student will review 10 articles and develop an annotated bibliography for each article. The 10 articles should cover one topic of student's interest in spatial modeling and public health. The bibliography should briefly describe (1) the reference of the article, (2) the purpose of the study, (3) the data used for the study, (4) the models used for the study, and (5) your evaluation/critics of the study.

Individual project: Students are asked to select specific health topics based on their interests, and complete a spatial modeling project with ArcGIS. After the final class, each student needs to hand in an 10-15 page project report in a designated format.

Final presentation: Students are expected to give a 15 minute presentation about their individual projects.

Attendance/Participation: Attendance is mandatory for all students. To encourage uninterrupted participation in class, it is expected that cell phone and pagers be TURNED OFF prior to entering the classroom. Absences may be excused if they are documentable. For expected absences, students must provide at least two business days advance notice of the absence. Acceptable reasons for absences include but are not limited to personal or family illness

or emergency, religious holidays, etc. Oversleeping, missing the bus, etc., are not excusable excuses. Students may be required to provide written documentation in order to receive an excused absence.

If absence is excused, students are responsible for material missed during any class session (lab or lecture). S/he should obtain notes from a peer for the material covered in class. If the absence is unexcused, assignments not turned in at the assigned time will be considered late and a penalty applied.

Other Important Information

Academic Integrity: Each student is bound by the academic honesty guidelines of the University and the student conduct code printed in the Student Guide and on the University website: <http://www.registrar.ufl.edu/catalog/policies/students.html>

Cheating or plagiarism in any form is unacceptable and inexcusable behavior. The Honor Code states: “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: On my honor, I have neither given nor received unauthorized aid in doing this assignment.”

Policy on Make-Up Work: Students are allowed to make up assignments ONLY as the result of illness or other unanticipated circumstances warranting a medical excuse and resulting in the student missing a homework or exam, consistent with College policy. Documentation from a health care provider is required. Assignments and exams missed for any other reason will receive a grade of zero.

Accommodations for Students with Disabilities: Students requiring accommodations must first register with the Dean of Students' Office. The Dean of Students' Office will provide documentation to the student, who must then provide this documentation to the faculty member when requesting accommodation. If students experience personal, academic, and social issues, please consider either of the following assistances:

University Counseling Services (P301 Peabody Hall – 392-1575)

<http://www.counsel.ufl.edu/base.asp?include=counselingServices.inc>

Student Mental Health Services in the Student Health Care Center (Room 245, Infirmary Bldg. – 392-1171)

<http://www.health.ufl.edu/shcc>