Geography 363 (Fall 2021): Introduction to Geographic Information Systems
Lectures: Monday 2:20 – 3:35p; Room 302
Lab: Wednesday 2:20 – 3:35p; Room 302

Instructor: Dr. Michael E. Hodgson
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Phone: 777-8976 Room 327-A
Office Hours: MW 1:00-2:00p Room327-A; or zoom mtg other times.

Date		Lists of Topics	Reading
Aug 23	M	Overview of Course, Important concepts of GIS	Blackboard
25	W	Specifying Geographic Location	Blackboard
30	M	Horizontal/Vertical Datums	Blackboard
Sep 1	W	*Installation of QGIS (Important: please wait until we install together in class)*	
6	M	*Labor Day Holiday* (no class)	
8	W	*Lab: Datums, Coordinate Systems*	
13	M	Map Projections, Data Models	Blackboard
15	W	*Lab: Map Projections and layers*	
20	M	Attribute Data Model, Queries by Attribute	Blackboard
22	W	*Lab: Data Models*	
27	M	Guest Speaker: Lynn Shirley, Core GIS LLC	Blackboard
29	W	*Lab: Attribute Queries*	
Oct 4	M	Image/Map Scanning; Georeferencing	Blackboard
6	W	*Lab: Image/Map Rectification*	
11	M	**1st EXAM (posted online at 2:20pm, due by 5:00pm or in-class??)**	
13	W	*Lab: Lab: Recording features from georeferenced map/image*	
18	M	Making a Map	Blackboard
20	W	*Lab: Using a GIS for Map Making; Map Project Assignment*	
25	M	Global Navigation Satellite Systems (GNSS): Introduction	Blackboard
27	W	*Lab: Mobile GNSS-Based Data Collection*	
Nov 1	M	Geospatial Metadata, Web Services	Blackboard
3	W	*Lab: Web Services*	

8	M	Precision/Accuracy & Spatial Statistics	Blackboard
10	W	*Lab: Spatial Statistics*	
15	M	Spatial Queries	Blackboard
17	W	*Lab: Analysis with Attribute and Geographic Queries*	
22	M	Census Data	Blackboard
24	W	*Thanksgiving Holiday* (no class)	
29	M	*Lab: Exploitation of Census data and combined queries*	
Dec 1	W	Lab and Course Review	
Dec 2	TH	**FINAL EXAM POSTED (evening)**	
Dec 6	F	**FINAL EXAM DUE (12:30p)**	

Deliverables	Weight
EXAM #1	20%
EXAM #2	30%
LABS	40%
Map Project	10%

Suggested Text (not required):

Chang, Kang-tsung, 2016 or later. *Introduction to Geographic Information Systems, 8th edition.* (McGraw-Hill: Boston).

Introduction to Geographic Information Systems
Geography 363 (Fall 2021): MW 2:20 – 3:35p

Objectives and Outcomes of Course

The purpose of the course is to provide an introduction to geographical information system (GIS) concepts and practical laboratory experience with state-of-the-art GIS software and hardware. By the end of the semester, students should be able to:

- Describe the uniqueness of a GIS compared to other mapping sciences and information systems
- Appropriately select coordinate Systems, map projections, and datums
- Select appropriate geographic data models and cartographic generalization
- Collect and transform geographic data into a GIS
- Use hand-held (code-based) GPS and understand basic principles of mapping/survey GPS
- Utilize fundamental aspatial/spatial queries and analysis techniques
- Understand, compute, and interpret fundamental spatial statistics and spatial error
- Practice network data models and analysis
- Derive descriptive and cause-effect relationships in geographically distributed data
- Communicate geographic data and distributions through statistical and map form
- Locate sources and content of geographic data (e.g. U.S. Census Data)

Prerequisites.   No prior experience with geographic information or a GIS is required. Students will use a free widely-used geographic information system software package (i.e. QGIS). ArcMap/ArcPro is also an option but these applications will only run on Windows computers while QGIS runs on Windows or Apple IOS computers. Students may use computers in Room 302 (when room is available) or their own laptop/desktop to complete the laboratory assignments.

Course Presentation.   Material will be presented through lectures (Monday and some Wednesdays) and laboratories (most Wednesdays). Much of the lecture material will come from the *lecture notes* and *text*.

Office Hours

Due to the covid-19 issues this semester I will hold office hours both in-person and remotely through a zoom session. For help with the lab due on Wednesdays, contact before the due day (i.e. Wednesday) to meet in person or open a zoom session to discuss the lab.

GRADING

Labs. Each laboratory assignment will use concepts discussed in the lecture assignments during the week. In **most** labs, students are expected to use **additional time** to complete the lab assignment. (Note: Exercise care in conducting laboratory work. Do not give the appearance that your work is a copy of other students.)   Each lab is due at the beginning of the following lab period (i.e. Wednesday at 2:20pm). If you are having trouble or have questions about the lab you must contact me at least 1-day before the lab is due. If the lab is one date late then the lab is worth 0 points.

Exams/Project. There are 2 exams in the course. The final exam is comprehensive covering all material in the course. Both exams will also require students to use their laptop/desktop for GIS application questions. An independent map project will be required where the student obtains their own data, creates a polished map presentation, and a short document (~2 to 3 pages) describing the content.

Class Attendance. The class meetings are in-person and students are expected to attend. Exceptions are for medical/approved absences. If I curve final grades at the end of the class I will only do so for students consistently attending lectures/labs.

Final Grade. The final grade accessed in the class will be based on the scale 91-100 = A, 81-90 = B, 71-80 = C, 61–70= D, below a 61 will be an F. These scores are derived simply by weighting each component in the course by the weight for the component shown above. I have, on occasion, curved grades up (e.g. a point or two). However, I only decide on a <u>possible</u> curve <u>after the **final** exam</u>.

Course Numeric Score (0 – 100 point scale):
   Score = (Exam #1 * 0.20) + (Exam #2 * 0.30) + (Average Lab * 0.40) + (Map Project * 0.10)
Example Numeric Score Calculation:
   Exam #1 (20%): 95
   Exam #2 (30%): 88
   Average Lab (40%): 93
   Map Project (10%): 95

   Score = (95 * 0.20) + (88 * 0.30) + (93 * 0.40) + (95 * 0.10)
      = 19 + 26.4 + 37.2 + 9.5
      = 92.2   (final letter grade is an A)

Academic Integrity and Behavior. You are expected to practice the highest possible standards of academic integrity. Any deviation from this expectation will result in a minimum academic penalty of your failing the assignment, and will result in additional disciplinary measures. This includes improper citation of sources, using another student's work, and any other form of academic misrepresentation.

Disability Services
Any student with a documented disability should contact the Office of Student Disability Services at 803-777-6142 to make arrangements for appropriate accommodations.

Face Coverings
For the fall semester 2021 (or until USC changes the policy) face coverings (covering nose and mouth) are required of all students in the classroom.