Introduction to Mapping and Geographic Information Science

GEOG 16160, Fall 2019
Section 4: Tuesdays & Thursdays, 2:00-3:15pm
Robinson 311

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office hours: Mondays 3:30-5:30pm
or by appointment

What's this course about?

Maps enable us to recognize and interpret patterns of natural and social factors that may not be evident through other types of analyses. A map is a unique form of communication that represents location, place, activities and movement across the surface of the earth.

Maps have unique capabilities

Geographic Information Systems is a collection of perspectives and tools for the collection, preparation, and analysis of digital spatial datasets, enabling the interpretation of this information to solve problems involving location.

Geographic Information Systems is used to analyze spatial data

Geographic Information Science is the investigation of how maps and spatial data can be used to address real world problems and bodies of knowledge, either through new methods, new uses, or new interpretations.

Geographic Information Science asks how we are using GISystems and what we might do with it

The power of **GIS** to visually communicate unique spatial patterns or characteristics enables applications and opportunities across many different disciplines, from the conceptual to the applied and the sciences to the humanities.

GIS is used in a huge number of fields, with tremendous growth and job potential

This course is designed to introduce students to the concepts, conventions, and aesthetic design choices of map-making within a geographic information systems interface through presentations, in-class activities, and independent assignments.

This course is about interpreting maps, preparing data, and using a GISystem to communicate spatial information

Course Objectives:

Through active participation in this course, students will gain proficiency with map making, data preparation, common fundamental tasks of GIS, and the critical analysis and interpretation of cartographical presentation in order to enable clear communication.

By participating fully in lessons, activities, exercises, and assessments, students will gain understanding and hands-on practical experience with the following:

1. Basic science of mapping the earth: how to read, interpret and create maps.
2. Structure and special considerations needed to create and prepare spatial data
3. Technologies of Geographic Information Systems and Science.
4. Methods of preparing, organizing, displaying, and interpreting spatial data.
5. Fundamentals of cartography and best practices for good map design.
6. Interfaces of GIS software, including ESRI ArcGIS: ArcMap & ArcCatalog.

Required materials, resources, and locations

- There are no assigned books for this course.
- There are several mandatory readings that will be assigned at specific times during the semester.
- All software programs for this course are installed on computers in the Geography & Environment Department, including Robinson 306, 311, and the student work lab inside the Geography & Environment department + labs in Engineering

Pay attention to the daily assignments and activities

- Data will be made available through a network drive. Pay close attention to the access methods to ensure that you always working with the most up-to-date versions.
- RowanCloud is an interface that enables you to access the university network and PC software from your own Mac/PC/Linux computer, through a virtual computing interface. You can download and install the software at http://www.rowan.edu/cloud

Attendance & Daily Activities

Attending all classes and completing all assignments are the best strategies for success in this course.

- Attendance is mandatory and will be taken every class.
- This class is cumulative, and each class builds on the previous material learned.
- You are expected to attend all classes.
- If absent, you may not necessarily have opportunity to make up missed activities missed.
- For any absence to be excused, you must contact me at least 24 hours prior to class time, though this is not a guarantee of accommodation.
- Please see the Provost's website for more information regarding absences: http://www.rowan.edu/provost/registrar/coursefaq.html
- Throughout the semester, there will be activities in class, ranging from group activities to individual quiz assessments to class-wide discussions.

Attending and participating in all classes is the single best strategy for your success in this course

Lab Exercises

As noted on the course calendar, there will be seven lab exercises, implementing the concepts from the lessons with practical experience using the GIS software.

- Lab exercises are generally due before the next class meeting; deadlines will be announced with assignment.
- Exercises vary in content and include both map figures plus answer to questions pertaining to the related skills and concepts.
- Assignments will be submitted through Blackboard.
- All documents must be in PDF format, following the example layout given on Blackboard.

Completing all labs on time and with close attention to the instructions will drastically improve your performance in this course

Lab Grading

Each lab assignment will be graded on a scale of 10 points, following this scheme:

- Submission of all materials in the required format: 2 points
- Correct implementation of geographic concepts: 3 points
- Correct implementation of technical skills: 3 points
- Correct, complete, and thoughtful responses to the assigned question: 2 points
- Submission of all materials prior to the deadline, in the appropriate format: +1 points
- Additional credit may be awarded for exercises that are particularly well done or especially innovative, or upon the completion of a specified bonus activity.
- Late labs are accepted until the announced final lab deadline. There are no late penalties, but it is in your best interest to complete before the next quiz.

Doing the labs by the weekly deadline can earn an additional 10%. Doing the labs well can be excellent preparation for exams and the final project. Late labs are accepted until the final lab deadline

Quizzes

There will be three quizzes, covering all readings lectures and skills in the activities and lab exercises until that date.

Three 2-part quizzes occurs after

- The *conceptual* part of the quizzes pertains to the skills and concepts of the material of the course and involves answering a series of questions
- The *practical* part of the quizzes involves executing an independent assignment during the exam class period, including a map making or evaluation activity using your acquired GIS skills

every two labs, covering all material up to that point.

Project

The course will culminate in a final project, in which you will devise and create a map of your own design, including the concept, data acquisition, symbolic representation, and interpretation of the spatial materials. There will be several sub-assignments beginning in week 11 of the semester, each designed to enable the next step of preparation and ensure your successful completion of the tasks.

You are expected to present your map to the class in a short presentation. The final map and an accompanying report that describes the processes and concepts that you incorporated into your map design will be due on the assigned day of the final exam. Refer to the course calendar for the assignment sequence, but specific instructions will be given during this period. As you participate in the assignments of the course, consider the theme you may wish to explore for your final project...

The last 4 weeks of the class are dedicated to the multi-part final project, in which you will find and prepare the data to communicate your own message through the medium of the map.

Evaluation

All course activities and assignments will be considered for the final grade, with the following weights:

16%: Attendance and active participation in each class activity
30%: Lab Exercises (6 @ 5% each)
24%: Quizzes (3 @ 8% each)
30%: Project (see project guidelines in class for evaluation breakdown)

Organization

The organization of the course material is essential, both for your success in completing the assignments this semester, and for the records of your efforts into the future. In this case, you should save all exercises, problems, and other produced materials into a neat folder on your networked H:\ drive. This will serve as a reminder and record of your accomplishments in this course, as well as examples for employers or other possible opportunities. Specific instructions and recommendations for file organization will be announced in class and may be reviewed during the semester.

PDFs

All submitted assignments must be in the PDF (Portable Document Format, as used in Adobe Acrobat) file format, with your name and the assignment in the title (e.g., YorkA_Lab5.pdf, if you were me, compiling lab 5). PDF documents preserve image and text formatting as you originally composed it, effectively creating a "digital print" of the document. Files composed in a word processor may distort the format or images. Additionally, the MXD project files of ArcGIS contain no spatial data and are not a portable record of your map—they do not contain any data and are not transferrable from user to user. Any submissions in the improper format cannot be evaluated and will be returned for re-submission if possible.

Blackboard

This course will be supplemented by a class Blackboard web page, available through: http://blackboard.rowan.edu (or http://rowan.blackboard.com). You are required to use it for submitting your assignments and keeping up with the progress of the course. Lecture materials, lab assignments and other course materials will be posted to the class Blackboard site. Announcements and possible syllabus or calendar changes will also be posted on the Blackboard page.

Email

Your official Rowan email is an essential form of communication in this course. You are expected to check your email every day, in case of any announcements or other urgent course information.
Email is my preferred form of communication for any course or topic questions, or any issues that arise during

the semester. I prioritize student emails and generally aim to respond in one business day (24 hours during the work week, perhaps longer on the weekend). Please feel free to contact me with any questions.

Office Hours

Office hours are an excellent time to ask questions related to the assignment, clarify course material, inquire about additional opportunities, or seek additional guidance or information. I will hold regular office hours in my office in the Geography and Environment department, room 317K. Additionally, I am glad to make other appointments as needed and am usually available for quick questions before or after class.

Integrity

Academic dishonesty, in any form, will not be tolerated. According to Rowan University policy, students committing any act of academic dishonesty may fail the course, be suspended from the university, or both. In order to avoid plagiarism, students should provide appropriate documentation whenever quoting, paraphrasing, summarizing, or otherwise using the language or ideas of others. The Rowan policy on Academic Issues is available on the Provost's web site.
http://www.rowan.edu/provost/policies/conduct_OfficeofTheProvostRowanUniversity.htm

Special Needs

Your academic success is important. If you have a documented disability that may have an impact on your work in this class, please contact me. Students must provide documentation of their disability to the Academic Success Center in order to receive official University services and accommodations. The Academic Success Center can be reached at 856-256-4234. The Center is located on the 3rd floor of Savitz Hall. The staff is available to answer questions regarding accommodations or assist you in your pursuit of accommodations.

Technology

The use of technology is both essential to this course and enriches the learning experience. However, the lab computers should not be used unless specified by the instructor, and should be physically stowed (screens off and pushed down, with keyboard and mouse placed to the side) when not required by the lesson. The use of computers for non-course-related tasks is not permitted during class sessions.

Cell phones, tablets, and other devices should be *off, silent, unused, and out of sight* during all lectures and labs, unless otherwise specified. The use of such devices may negate your credit for attendance and participation. No such devices may be used during any exam and will result in forfeiture of the exam and a grade of zero.

Laptop computers are not recommended. They are not permitted during exams, except in the case of special permission for accessibility. Working on other coursework or browsing to non-course websites is also not permitted. Please do not create an unnecessary distraction for yourself or others.

Please do not let technology distract yourself or others.

It is impossible to text in class without distracting yourself or others.

I am distracted by your texting in class.

Curiosity & Patience

Mapping, along with Geographic Information Systems and Science, builds upon a unique set of skills and requirements that differ from many of your other courses, yet many of the concepts will be familiar to you from other types of experiences. Through persistence with the new software interfaces and assignment requirements and curiosity about the new possibilities they reveal, you will gain a skill set that can be carried to many other contexts.

Patience and persistence pay off in mapping—you can do it

Disclaimer: The Instructor reserves the right to make changes to any information contained in this syllabus at any time during the semester. Changes will be announced and an updated version of the syllabus will be posted on Blackboard and/or distributed to students.

Calendar: *subject to change

Week	Date	Topic	Reading	Assignments DUE (on Blackboard at the start of the class session)
1	3-Sep	Intro to the Course		
	5-Sep	What is GIS?	LGM&R Chapter 1 "Systems, Science, Study"	
2	10-Sep	File Management	Hillier Chapter 1 "Introduction to ArcGIS"	
	12-Sep	Lab 1		
3	17-Sep	Geographic Representation	Furuti "Cartographical Map Projections"	
	19-Sep	Lab 2		Lab 1 DUE
4	24-Sep	Quiz 1		
	26-Sep	Quiz 1		Lab 2 DUE
5	1-Oct	Measurement & Scale	Bolstad Chapter 2 "Data Models"	
	3-Oct	Lab 3		
6	8-Oct	Map Symbolization	Krygier & Wood Chapter 9 "Map Symbolization"	
	10-Oct	Lab 4		Lab 3 DUE
7	15-Oct	Quiz 2		
	17-Oct	Quiz 2		Lab 4 DUE
8	22-Oct	Classification & Data Display	Krygier & Wood Chapter 8 "Map Generalization and Classification"	
	24-Oct	Lab 5		
9	29-Oct	Data Integration & Design	Krygier & Wood Chapter 8 "Map Generalization and Classification"	
	31-Oct	Lab 6		Lab 5 DUE
10	5-Nov	Quiz 3		
	7-Nov	Quiz 3		Lab 6 DUE
11	12-Nov	Projects - Concept		
	14-Nov	Projects - Data		
12	19-Nov	Projects - Data		
	21-Nov	Projects - Analysis		
13	26-Nov	Projects - Analysis		
	28-Nov	No Class - Thanksgiving		
14	3-Dec	Presentations		
	5-Dec	Presentations		
	10-Dec	TBD		**Final Project DUE Dec 12 at 5pm**