

# GEOG390: Principles in GIS

Section 300

## Lecture

Meeting Time: Monday, Wednesday, Friday at 10:00am to 11:35am  
Location: OMB 103  
Credit Hours: 4 credit hours

## Lab Time and Location

Meeting Time: Tuesday, Thursday at 10:00am to 12:00pm  
Location: CSA 307

\*See Course Schedule below for detailed information regarding lab schedule

## Course Description

This course covers basic concepts of design, planning and implementation of Geographic Information Systems (GIS). This lab-oriented course covers the guiding principles behind the various facets of GIS including spatial data types, database development and management, map projections, spatial analysis, and cartographic production. In general, it is my expectation that at the end of the class each student will be able to:

- Understand basic GIS properties.
- Differentiate between vector and raster data models.
- Understand map projections and their importance.
- Apply GIS techniques in the lab to solve spatial problems.
- Prepare effective maps using basic cartographic principles.
- Conduct basic spatial analysis and modeling.

## Instructor Details

Instructor: Dr. Hwang Lee, Instructional Assistant Professor, Geography

Office: CSA 301D

Email: [hwang.lee@tamu.edu](mailto:hwang.lee@tamu.edu)

Office Hours: Wednesdays 12:00 pm to 1:00 pm

Teaching Assistant: Sharmin Ara

Office Hours: Mondays 1:30 pm to 2:30 pm (via zoom)

Zoom link and office hour schedule will be posted on Canvas

Email: [sharmin\\_ara@tamu.edu](mailto:sharmin_ara@tamu.edu)

## Communication

Please use the lab period to direct questions about lab materials to your TA.

Please contact the instructor regarding any lecture-based questions. If you do not receive a response within 2 business days, please follow up again. The instructor may not respond to e-mails or messages outside of normal business hours.

Important information regarding the course will be shared via the Announcements section on Canvas. It is students' responsibility to regularly check the Announcements and to follow any relevant instructions.

## Textbook and Resource Materials

### Lab Manual (**Required**)

Price, M. 2023. Mastering ArcGIS Pro. 2<sup>nd</sup> ed. New York. McGraw-Hill.  
ISBN13:9781264091201

### Lecture Textbook (**Recommended**)

Bolstad, P. 2023. GIS Fundamentals: A First Text on Geographic Information Systems. 7th ed. Ann Arbor: XanEdu. ISBN: 9780971764750. (The 6th ed also works)

## Software

Labs utilize the ArcGIS™ suite of software developed by ESRI, including ArcGIS PRO. It is available on the CSA lab computers.

Instructions on obtaining a personal copy are provided in the course modules on Canvas. To install ArcGIS Pro on a Mac, you will need a virtual machine (using Parallels, VMWare Fusion, or similar). The software is also accessible via remote desktop to the Geosciences VOAL.

Instructions for VOAL access will be available on Canvas.

## Canvas

Updates to the syllabus as well as other course materials will be made available through TAMU Canvas.

## Lab Materials

- Minimum: 8 GB Flash drive or a cloud-based storage system
- Lab Data: Canvas

All data required for labs will be located with associated labs on Canvas.

## Grading Policy

This course involves both a Lecture and a Lab component.

### Component 1: Lectures (500 points)

Lecture attendance is **MANDATORY**. Lectures consist of a mix of lectures and in-class exercises.

In Class Activities (200 points): There are six in-class activities. These activities will focus on applying GIS concepts in a classroom, not on a computer. **Activities MUST BE DONE IN CLASS AND SUBMITTED IN CANVAS**. If you miss an in-class exercise, you may make-up ONE missed in-class exercises, no questions asked, during the semester. Once used, you may not make-up any missed assignments without an excused absence. **Instructions on how to complete the in-class exercises will only be given during classes, so I strongly encourage you to attend classes to complete the exercises.** It will save you a lot of time!

Quizzes & Exams (300 points): There will be **TWO mini quizzes (50 points each = 100) and 1 FINAL (200 points)** exams during the semester. Final exam will cover the entire course.

### Component 2: Labs (500 points)

There is no way to learn about Geographic Information Science without spending considerable time in the lab working on GIS problems. While the scheduled lab time is two hours, labs will typically require time outside of the scheduled lab hours to complete.

Lab Attendance (50 points): Attendance to lab classes is **MANDATORY**. Students are expected to attend the full lab session. The TA will take attendance during each lab session in the computer lab. **You need to stay in each lab session for at least 30 minutes to be recorded as attended.** The TA is under no obligation to assist you outside of their scheduled office hours if you do not attend the lab.

Lab Exercises (450 points): There will be 7 lab exercises during which you will practice applying GIS theory and concepts to real-world applications using ArcGIS Pro. All lab instructions/templates will be available on Canvas, along with a corresponding assignment Google Drive if any. All assignments are to be submitted in Canvas.

Quiz (2)	100	pts
Final Exam	200	pts
In-Class Activities	200	Pts
Lab Attendance	50	Pts
Lab Exercises	450	pts
<b>Total Points</b>	<b>1000</b>	<b>pts</b>

Letter grades approximately follow these cutoffs:

Over 900 points = A, 800-899 points = B, 700-799 points = C,

600-699 points = D, less than 600 points = F.

## Late Work Policy

All assignments are to be submitted by the end of the due date (11:59pm). The due date for each lab is **one week** from the beginning day of the lab. For example, if your section starts a new lab on Tuesday (June 3), the deadline for this new lab will be by the end of the Tuesday in **ONE week** (June 10). Late assignments received after the deadline will receive a deduction of 10% per day, including weekends and holidays. **Assignments late for over 5 days** will receive a 0. In the case of an excused absence, students should contact their TAs for deadline extension. Work submitted by a student as makeup work for an excused absence is not considered late work and is exempted from the late work policy ([Student Rule 7](#)).

## Course Schedule

Week	Day	Date	Lecture Topic	Lab Day	Lab Date	Lab Topic	Mastering ArcGIS Pro
1	W	May 28	Introduction to GIS	T	May 27	NO Lab	
	F	May 30	GIS Basics and Map Scale	TH	May 29	NO Lab	
2	M	June 2	In Class Activity #1- GIS Data Models – Vector	T	June 3	Lab 1: Getting to Know GIS	Chapter 1
	W	June 4	GIS Data Models – Raster	TH	June 5	Lab 1: Getting to Know GIS	Chapter 1
	F	June 6	Mini Quiz #1				
3	M	June 9	Basic Cartography Concepts	T	June 10	Lab 2: Mapping GIS Data	Chapter 2
	W	June 11	In Class Activity #2 – Basic Cartography	TH	June 12	Lab 2: Mapping GIS Data	Chapter 2
	F	June 13	Shape of the Earth and Datums				
4	M	June 16	Map Projections	T	June 17	Lab 3: Presenting GIS Data	Chapter 2
	W	June 18	Course content check-in	TH	June 19	NO LAB - Holiday	
	F	June 20	Coordinate Transformations				
5	M	June 23	In Class Activity #3 - Projections	T	June 24	Lab 3: Presenting GIS Data	Chapter 3
	W	June 25	Mini Quiz #2	TH	June 26	Lab 4: Coordinate Systems	Chapter 4

	F	June 27	Intro to Geodatabases				
6	M	June 30	Catch up class	T	July 1	NO LAB	
	W	July 2	Catch up class	TH	July 3	Lab 4: Coordinate Systems	Chapter 4
	F	July 4	NO Class - Holiday				
7	M	July 7	Attribute Queries	T	July 8	Lab 5: Managing Raster & Vector Data	Chapter 5
	W	July 9	Spatial Data Analysis P1	TH	July 10	Lab 5: Managing Raster & Vector Data	Chapter 5
	F	July 11	Spatial Data Analysis P2				
8	M	July 14	In-Class Activity # 4 – Spatial Data Analysis	T	July 15	Lab 6: Attribute Data & Queries	Chapter 6
	W	July 16	Raster Analysis	TH	July 17	Lab 6: Attribute Data & Queries	Chapter 6
	F	July 18	Raster Analysis				
9	M	July 21	In-Class Activity #5 – Raster Analysis	T	July 22	Lab 7: Joins & Overlays	Chapter 7
	W	July 23	Multi-Decision Criteria Analysis	TH	July 24	Lab 7: Joins & Overlays	Chapter 7
	F	July 25	Terrain Analysis				
10	M	July 28	In-Class Activity #6: Terrain Analysis	T	July 29	NO LAB	
	W	July 30	Spatial Interpolation	TH	July 31	NO LAB	
	F	Aug 1	Final Exam Review/Catch up				
11	W	Aug 6	Final Exam – IN PERSON				

\*M=Monday; T=Tuesday; W=Wednesday; TH=Thursday; F=Friday

**\*NO Lab** means no lab session in the CSA computer classroom for that day. You can continue working on your own to complete the labs. Your TA may still host weekly office hours to answer lab-related questions during the no-lab weeks.

Texas A&M at Qatar

Texas A&M University at Qatar students can also direct their technical questions to [servicedesk@qatar.tamu.edu](mailto:servicedesk@qatar.tamu.edu)

Texas A&M at Galveston

On-campus learning resources to support students in achieving excellence are available through The Commons ([tamug.edu/commons](http://tamug.edu/commons)).

## Texas A&M at Qatar

*Texas A&M University at Qatar students should contact the Center for Teaching and Learning at [ctl@qatar.tamu.edu](mailto:ctl@qatar.tamu.edu) for questions related to learning support, peer tutoring, supplemental instruction, writing support, etc.*

## University Policies

*This section outlines the university level policies that must be included in each course syllabus. The TAMU Faculty Senate established the wording of these policies.*

**NOTE:** Faculty members should not change the written statements. A faculty member may add separate paragraphs if additional information is needed

### Attendance Policy

The university views class attendance and participation as an individual student responsibility. Students are expected to attend class and to complete all assignments.

Please refer to [Student Rule 7](#) in its entirety for information about excused absences, including definitions, and related documentation and timelines.

### Makeup Work Policy

Students will be excused from attending class on the day of a graded activity or when attendance contributes to a student's grade, for the reasons stated in Student Rule 7, or other reason deemed appropriate by the instructor.

Please refer to [Student Rule 7](#) in its entirety for information about makeup work, including definitions, and related documentation and timelines.

Absences related to Title IX of the Education Amendments of 1972 may necessitate a period of more than 30 days for make-up work, and the timeframe for make-up work should be agreed upon by the student and instructor" ([Student Rule 7, Section 7.4.1](#)).

"The instructor is under no obligation to provide an opportunity for the student to make up work missed because of an unexcused absence" ([Student Rule 7, Section 7.4.2](#)).

Students who request an excused absence are expected to uphold the Aggie Honor Code and Student Conduct Code. (See [Student Rule 24](#).)

## Academic Integrity Statement and Policy

"An Aggie does not lie, cheat or steal, or tolerate those who do."

"Texas A&M University students are responsible for authenticating all work submitted to an instructor. If asked, students must be able to produce proof that the item submitted is indeed the work of that student. Students must keep appropriate records at all times. The inability to authenticate one's work, should the instructor request it, may be sufficient grounds to initiate an academic misconduct case" ([Section 20.1.2.3, Student Rule 20](#)).

### Texas A&M at College Station

*You can learn more about the Aggie Honor System Office Rules and Procedures, academic integrity, and your rights and responsibilities at [aggiehonor.tamu.edu](http://aggiehonor.tamu.edu).*

### Texas A&M at Galveston

*You can learn more about the Honor Council Rules and Procedures as well as your rights and responsibilities at [tamug.edu/HonorSystem](http://tamug.edu/HonorSystem).*

### Texas A&M at Qatar

*You can learn more about academic integrity and your rights and responsibilities at Texas A&M University at Qatar by visiting the [Aggie Honor System](#) website.*

### Americans with Disabilities Act (ADA) Policy

Texas A&M University is committed to providing equitable access to learning opportunities for all students. If you experience barriers to your education due to a disability or think you may have a disability, please contact the Disability Resources office on your campus (resources listed below) Disabilities may include, but are not limited to attentional, learning, mental health, sensory, physical, or chronic health conditions. All students are encouraged to discuss their disability related needs with Disability Resources and their instructors as soon as possible.

### Texas A&M at College Station

*Disability Resources is located in the Student Services Building or at (979) 845-1637 or visit [disability.tamu.edu](http://disability.tamu.edu).*

### Texas A&M at Galveston

*Disability Resources is located in the Student Services Building or at (409) 740-4587 or visit [tamug.edu/counsel/Disabilities](http://tamug.edu/counsel/Disabilities).*

**Texas A&M at Qatar**

*Disability Services is located in the Engineering Building, room 318C or at +974.4423.0316 or visit <https://www.qatar.tamu.edu/students/student-affairs/disability-services>.*

**Title IX and Statement on Limits to Confidentiality**

Texas A&M University is committed to fostering a learning environment that is safe and productive for all. University policies and federal and state laws prohibit gender-based discrimination and sexual harassment, including sexual assault, sexual exploitation, domestic violence, dating violence, and stalking.

With the exception of some medical and mental health providers, all university employees (including full and part-time faculty, staff, paid graduate assistants, student workers, etc.) are Mandatory Reporters and must report to the Title IX Office if the employee experiences, observes, or becomes aware of an incident that meets the following conditions (see [University Rule 08.01.01.M1](#)):

- The incident is reasonably believed to be discrimination or harassment.
- The incident is alleged to have been committed by or against a person who, at the time of the incident, was (1) a student enrolled at the University or (2) an employee of the University.

Mandatory Reporters must file a report regardless of how the information comes to their attention – including but not limited to face-to-face conversations, a written class assignment or paper, class discussion, email, text, or social media post. Although Mandatory Reporters must file a report, in most instances, a person who is subjected to the alleged conduct will be able to control how the report is handled, including whether or not to pursue a formal investigation. The University's goal is to make sure you are aware of the range of options available to you and to ensure access to the resources you need.

**Texas A&M at College Station**

Students wishing to discuss concerns related to mental and/or physical health in a confidential setting are encouraged to make an appointment with [University Health Services](#) or download the [TELUS Health Student Support app](#) for 24/7 access to professional counseling in multiple languages. Walk-in services for urgent, non-emergency needs are available during normal business hours at University Health Services locations; call 979.458.4584 for details.

*Students can learn more about filing a report, accessing supportive resources, and navigating the Title IX investigation and resolution process on the University's [Title IX webpage](#).*

**Texas A&M at Galveston**

*Students wishing to discuss concerns in a confidential setting are encouraged to make an appointment with the Counseling Office in the Seibel Student Center, or call (409)740-4587. For additional information, visit [tamug.edu/counsel](http://tamug.edu/counsel).*

*Students can learn more about filing a report, accessing supportive resources, and navigating the Title IX investigation and resolution process on the Galveston Campus' [Title IX webpage](#).*

**Texas A&M at Qatar**

*Texas A&M University at Qatar students wishing to discuss concerns in a confidential setting are encouraged to visit the [Health and Wellness](#) website for more information.*

*Students can learn more about filing a report, accessing supportive resources, and navigating the Title IX investigation and resolution process on the University's [Title IX webpage](#).*

**Statement on Mental Health and Wellness**

Texas A&M University recognizes that mental health and wellness are critical factors influencing a student's academic success and overall wellbeing. Students are encouraged to engage in healthy self-care practices by utilizing the resources and services available through [University Health Services](#). The [TELUS Health Student Support app](#) provides access to professional counseling in multiple languages anytime, anywhere by phone or chat, and the 988 Suicide & Crisis Lifeline offers 24-hour emergency support at 988 or [988lifeline.org](http://988lifeline.org).

**Texas A&M College Station**

Students needing a listening ear can contact University Health Services (979.458.4584) or call the Texas A&M Helpline (979.845.2700) from 4:00 p.m. to 8:00 a.m. weekdays and 24 hours on weekends while classes are in session. 24-hour emergency help is also available through the 988 Suicide & Crisis Lifeline (988) or at [988lifeline.org](http://988lifeline.org).

**Texas A&M at Galveston**

*Students who need someone to talk to can call (409) 740-4736 from 8:00 a.m. to 5:00 p.m. weekdays or visit [tamug.edu/counsel](http://tamug.edu/counsel) for more information. For 24-hour emergency assistance during nights and weekends, contact the TAMUG Police Dept at (409) 740-4545. 24-hour emergency help is also available through the 988 Suicide & Crisis Lifeline (988) or at [988lifeline.org Links to an external site.](#)*

## Texas A&amp;M at Qatar

*Texas A&M University at Qatar students wishing to discuss concerns in a confidential setting are encouraged to visit the [Health and Wellness](#) website for more information.*