GEOG 5510
Applications of GIS
Department of Geography, Sustainability,
Community and Urban Studies

Syllabus - Fall 2025

Excluding materials for purchase, syllabus information may be subject to change. The most up-to-date syllabus is located within the course in HuskyCT.

Course and Instructor Information

Course Title: Applications of Geographic Information Systems
Credits: 3
Format: Online
Recommended Preparation: Geography 5500

Professor: Richard Mrozinski
Email: mrozinski@uconn.edu
Office: 429 Austin Building
Telephone: 860-486-3788
Office Hours/Availability:

In person: Tue 9 - 10, Wed 1-3, or by appointment (contact through email).
Virtual: by appointment via WebEx (contact through email).

Email is the preferred method of contact. I normally respond within 24 hours (often quicker if you email me 8am-4pm M-F)

Course Objectives

By the end of the semester, students should be able to:

1. Differentiate between raster and vector data models and how each is used by GIS to represent real-world features.
2. Assemble GIS datasets consisting of spatial features along with non-spatial attributes.
3. Produce cartographic products for effective communication using GIS software.
4. Design a spatial analysis methodology to be utilized in a GIS research project.
5. Develop models for geoprocessing automation.

Course Description

Geography 5510 is a course covering the application of geographic information systems (GIS). Emphasis will be placed on understanding GIS through actual use of software, mainly ArcGIS. Students will study principal functional components of ArcGIS including: general GIS design and management theory, spatial and attribute data automation, database design, database management, spatial analysis, cartographic production, and application design and implementation. The course includes a final project component, where students investigate a GIS application in depth.

Prerequisites: Geography 5500 is a recommended prerequisite for this course. Students are expected to come to class with basic computer literacy along with a basic theoretical understanding of GIS (vector and raster). There are many textbooks covering introductory GIS topics, and a brief review can never hurt if you do not feel comfortable with this requirement.

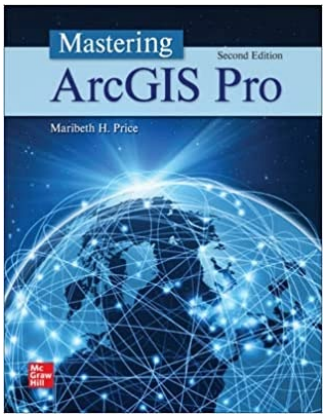
Course Materials

Required Textbook (should be obtained before the first day of class)**:**

***Mastering ArcGIS Pro,2nd edition* by Maribeth Price**

Publisher: McGraw-Hill Higher Education

ISBN: 978-1-264-52542-3



This text is written to be used with **ArcGIS Pro**. Also, it is important to use the 2nd edition of *Mastering ArcGIS Pro*.

The textbook is available through a local or online bookstore of your choice. The UConn Bookstore carries the required text, which can be shipped (fees apply).

Additional course readings and media may be available within HuskyCT, through either an Internet link or Library Resources

Course Outline

	Topic
Module 1	What is GIS?
Module 2	Symbolizing GIS Data
Module 3	Presenting GIS Data [cartography]
Module 4	Coordinate Systems
Module 5	Managing Vector Data
Module 6	Managing Raster Data
Module 7	Tables & Attribute Management
Module 8	Vector Analysis: Queries, Spatial Joins, & Overlay Analysis
Module 9	Raster Analysis
Module 10	ModelBuilder Basics
Module 11	Advanced ModelBuilder Topics
All course due dates are identified in the Course Schedule. All assignments and activities are due at midnight (EST) on the specified day.	

Course Requirements and Grading

Summary of Course Grading:

Course Components	Points	Weight
Module Assignments		**60%**
Practice Assignment	10	
Syllabus Quiz	10	
Course Intro on Piazza	5	
Module 1 Quiz	5	
Assignment 1.1 - GIS Terms & Concepts Wiki	5	
Assignment 1.2 - GIS Exercise	35	
Module 2 Quiz	5	
Assignment 2.1 - GIS Terms & Concepts Wiki	5	
Assignment 2.2 - GIS Exercise	35	
Module 3 Quiz	5	
Assignment 3.1 - GIS Terms & Concepts Wiki	5	
Assignment 3.2 - GIS Exercise	35	
Module 4 Quiz	5	
Assignment 4.1 - GIS Terms & Concepts Wiki	5	
Assignment 4.2 - GIS Exercise	40	
Module 5 Quiz	5	
Assignment 5.1 - GIS Terms & Concepts Wiki	5	
Assignment 5.2 - GIS Exercise	35	
Module 6 Quiz	5	
Assignment 6.1 - GIS Terms & Concepts Wiki	5	
Assignment 6.2 - GIS Exercise	35	
Module 7 Quiz	5	
Assignment 7.1 - GIS Terms & Concepts Wiki	5	
Assignment 7.2 - GIS Exercise	35	
Module 8 Quiz	5	
Assignment 8.1 - GIS Terms & Concepts Wiki	5	
Assignment 8.2 - GIS Exercise	35	
Assignment 8.3 - GIS Exercise	40	
Module 9 Quiz	5	
Assignment 9.1 - GIS Terms & Concepts Wiki	5	
Assignment 9.2 - GIS Exercise	35	
Assignment 9.3 - GIS Exercise	40	

Module 10 Quiz	5	
Assignment 10.1 - GIS Terms & Concepts Wiki	5	
Assignment 10.2 - GIS Exercise	35	
Module 11 Quiz	5	
Assignment 11.1 - GIS Terms & Concepts Wiki	5	
Assignment 11.2 - GIS Exercise	35	
Course Project		**20%**
Project Subject	10	
Project Proposal	50	
Project Status Report	20	
Final Project Submission	100	
Project Review of Peers	20	
Exam	200	**20%**
Total	**1000**	**100%**

Module Assignments

Each assignment will be introducing new concepts and commands, building on the GIS principles covered in previous exercises. Therefore, it is important to finish the exercises in the order they are assigned. It is also a good idea to read the lab in advance, and review/note new procedures or activities.

Course Project

The course includes a final project component where students investigate a GIS application in depth. The project is intended to provide a deeper understanding of a GIS application through experience. The project should investigate a particular research problem and use ArcGIS. The project most likely will contain spatial data creation (digitize, geocode, etc) and it must include a spatial analysis component.

Exam

There will be an exam at the end of the semester. It will consist of several GIS problems which you will need to complete (see Course Schedule for details of final exam dates).

Course Grading Scale:

Grade	Letter Grade	GPA
93-100	A	4.0
90-92	A-	3.7
87-89	B+	3.3
83-86	B	3.0
80-82	B-	2.7
77-79	C+	2.3
73-76	C	2.0
70-72	C-	1.7
67-69	D+	1.3
63-66	D	1.0
60-62	D-	0.7
<60	F	0.0

Due Dates and Late Policy

All course due dates are identified in the Course Schedule. Deadlines are based on Eastern Standard Time; if you are in a different time zone, please adjust your submission times accordingly. *The instructor reserves the right to change dates accordingly as the semester progresses. All changes will be communicated in an appropriate manner.*

Assignments are due at midnight (EST) of the specified day. The weekly Wiki entry will not be accepted if more than two days late. Late GIS assignments are penalized 10% per day, and will not be accepted if they are more than one week late. If you know you will be having a conflict for a significant event or emergency (wedding, childbirth, car accident), please let me know beforehand (if possible) and we can usually arrange something. All submissions are via HuskyCT. Incorrect homework submissions will be returned. **Do not email me your homework submissions.**

Feedback and Grades

I will make every effort to provide feedback and grades within one week of the assignment due date. To keep track of your performance in the course, refer to **My Grades** in HuskyCT.

For additional information on graduate grading policies see: https://gradcatalog.uconn.edu/grad-school-info/academic-regulations/#Grades.

Weekly Time Commitment

You should expect to dedicate 10 to 15 hours a week to this course. This expectation is based on the various course activities, assignments, and assessments and the University of Connecticut's policy regarding credit hours. (More information related to hours per week per credit can be accessed at the Online Student website).

Husky Study Groups

Are you interested in forming a study group with other students in the class? There is a study group application in Nexus that can help you get started. Check out this video if you might be interested or visit here for more information.

Discussion Forum

This term we will be using ***Piazza*** for class discussion. The system is highly catered to getting you help fast and efficiently from classmates and the instructor. The quicker you begin asking questions on Piazza (rather than via email), the quicker you'll benefit from the collective knowledge of your classmates and instructor. I encourage you to ask questions when you're struggling to understand a concept — you can even do so anonymously.

As the course instructor, I find that I am answering the same questions over and over. I also find students like knowing others in the class have the same questions, and when I answer a question on Piazza, it's answered for everybody. Therefore, if you do email me questions about the assignments, I will redirect you to submit your question on Piazza.

Find our class page at https://piazza.com/uconn/fall2024/geography5510. An email invitation for our class on Piazza will be sent to you when the semester begins.

Student Authentication and Verification

The University of Connecticut is required to verify the identity of students who participate in online courses and to establish that students who register in an online course are the same students who participate in and complete the course activities and assessments and receive academic credit. Verification and authentication of student identity in this course will include:

1. Secure access to the learning management system using your unique UConn NetID and password.
2. There is a mandatory meeting with an ID check during the 5th week of the semester. The meeting will focus on the semester project, but we can discuss other items if you desire. Normally, this meeting takes around 25 minutes and can occur in-person (if you are on-campus) or using WebEx (video conferencing). If we are meeting via WebEx, you must have video conferencing capabilities.

How to Succeed in this Course

All students can succeed in this course and I am here to help you along the way. Please do not hesitate to ask questions or to schedule office hours. All questions are important here. Success in this course program depends heavily on your personal health and well-being. Recognize that stress is an expected part of the college experience, and it often can be compounded by unexpected setbacks or life changes outside the classroom. I strongly encourage you to reframe challenges as an unavoidable pathway to success. Reflect on your role in taking care of yourself throughout the semester, before the demands of exams and projects reach their peak. Please feel free to reach out to me about any difficulty you may be having that may impact your performance in your courses or campus life as soon as it occurs and before it becomes too overwhelming. In addition to your academic advisor, I strongly encourage you to contact the many other support services on campus that stand ready to assist you.

Resources for Students Experiencing Distress

The University of Connecticut is committed to supporting students in their mental health, their psychological and social well-being, and their connection to their academic experience and overall wellness. The university believes that academic, personal, and professional development can flourish only when each member of our community is assured equitable access to mental health services. The university aims to make access to mental health attainable while fostering a community reflecting equity and diversity and understands that good mental health may lead to personal and professional growth, greater self-awareness, increased social engagement, enhanced academic success, and campus and community involvement.

Students who feel they may benefit from speaking with a mental health professional can find support and resources through the **Student Health and Wellness-Mental Health** (SHaW-MH) office. Through SHaW-MH, students can make an appointment with a mental health professional and engage in confidential conversations or seek recommendations or referrals for any mental health or psychological concern.

Mental health services are included as part of the university's student health insurance plan and also partially funded through university fees. If you do not have UConn's student health insurance plan, most major insurance plans are also accepted. Students can visit the **Student Health and Wellness-Mental Health located in Storrs on the main campus in the Arjona Building, 4th Floor,** or contact the office at **(860) 486-4705, or** **https://studenthealth.uconn.edu** for services or questions.

Accommodations for Illness or Extended Absences

Please stay home if you are feeling ill and please go home if you are in class and start to feel ill. If illness prevents you from attending class, it is your responsibility to notify your instructor as soon as possible. You do not need to disclose the nature of your illness, however, you will need to work with your instructor to determine how you will complete coursework during your absence.

If life circumstances are affecting your ability to focus on courses and your UConn experience, students can email the Dean of Students at dos@uconn.edu to request support. Regional campus students should email the Student Services staff at their home campus to request support and faculty notification.

COVID-19 Specific Information: People with COVID-19 have had a wide range of symptoms reported – ranging from mild symptoms to severe illness. These symptoms may appear 2-14 days after exposure to the virus and can include: Fever – Cough – Shortness of breath or difficulty breathing – Chills – Repeated shaking with chills – Muscle pain – Headache – Sore throat – New loss of taste or smell.

Additional information including what to do if you test positive or you are informed through contract tracing that you were in contact with someone who tested positive, and answers to other important questions can be found here: https://studenthealth.uconn.edu/updates-events/coronavirus.

Student Responsibilities and Resources

As a member of the University of Connecticut student community, you are held to certain standards and academic policies. In addition, there are numerous resources available to help you succeed in your academic work. Review these important standards, policies and resources, which include:

- The Student Code
  - Academic Integrity
  - Resources on Avoiding Cheating and Plagiarism
- Copyrighted Materials
- Netiquette and Communication
- Adding or Dropping a Course
- Academic Calendar
- Policy Against Discrimination, Harassment and Inappropriate Romantic Relationships
- Sexual Assault Reporting Policy

Students with Disabilities

The University of Connecticut is committed to protecting the rights of individuals with disabilities and assuring that the learning environment is accessible. If you anticipate or experience physical or academic barriers based on disability or pregnancy, please let me know immediately so that we can discuss options. Students who require accommodations should contact the Center for Students with Disabilities, Wilbur Cross Building Room 204, (860) 486-2020 or https://csd.uconn.edu.

Blackboard measures and evaluates accessibility using two sets of standards: the WCAG 2.0 standards issued by the World Wide Web Consortium (W3C) and Section 508 of the Rehabilitation Act issued in the United States federal government." (Retrieved March 24, 2013 from Blackboard's website).

Software/Technical Requirements (with Accessibility and Privacy Information)

The software/technical requirements for this course include:

- **ArcGIS Pro** (free to UConn students through AGOL download) (ESRI Accessibility Statement, ESRI Privacy Statement). ***Please note:*** ArcGIS is a Windows program and will not run on MacOS. The instructor will give detailed instructions for downloading and installing ArcGIS the first week of the semester.
- **HuskyCT/Blackboard** (HuskyCT/ Blackboard Accessibility Statement, HuskyCT/ Blackboard Privacy Policy)
- **Adobe Acrobat Reader** (Adobe Reader Accessibility Statement, Adobe Reader Privacy Policy)
- **Microsoft Office** (free to UConn students through software.uconn.edu) (Microsoft Accessibility Statement, Microsoft Privacy Statement)
- **Piazza** (Piazza Accessibility Statement, Piazza Privacy Policy)
- Dedicated access to high-speed internet with a minimum speed of 1.5 Mbps (4 Mbps or higher is recommended).
- WebCam

Privacy Statement: For information on managing your privacy at the University of Connecticut, visit the University's Privacy page.

NOTE: This course has NOT been designed for use with mobile devices.

Help

Technical and Academic Help provides a guide to technical and academic assistance.

This course is completely facilitated online using the learning management platform, HuskyCT. If you have difficulty accessing HuskyCT, you have access to the in person/live person support options available during regular business hours through the Help Center. You also have 24x7 Course Support including access to live chat, phone, and support documents.

Student Technology Training

Student technology training is now available in a new HuskyCT short course created by students for students. It will prepare you to use the IT systems and services that you will use throughout your time at UConn, whether learning online or on-campus. It is available at https://lms.uconn.edu/ultra/courses/_80016_1/cl/outline .

Minimum Technical Skills

To be successful in this course, you will need the following technical skills:

- Use electronic mail with attachments.
- Save files in commonly used word processing program formats.
- Copy and paste text, graphics or hyperlinks.
- Work within two or more browser windows simultaneously.
- Open and access PDF files.

Evaluation of the Course

Students will be given an opportunity to provide feedback on their course experience and instruction using the University's standard procedures, which are administered by the Office of Institutional Research and Effectiveness (OIRE).

The University of Connecticut is dedicated to supporting and enhancing teaching effectiveness and student learning using a variety of methods. The Student Evaluation of Teaching (SET) is just one tool used to help faculty enhance their teaching. The SET is used for both formative (self-improvement) and summative (evaluation) purposes.

Additional informal formative surveys and other feedback instruments may be administered within the course.