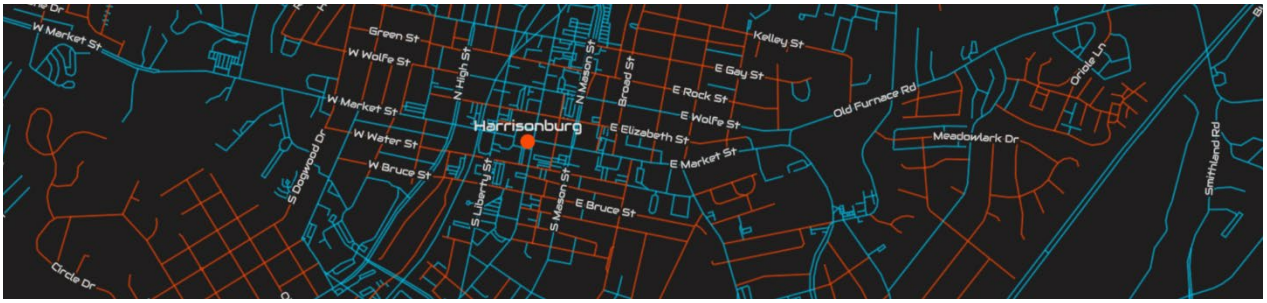
Geography 215: Spring 2026

Introduction to Geographic Information Science and Cartography



Instructor

Dr. Tim Prestby (he/him/his) | Assistant Professor of Applied GIS | YQVC5Z@jmu.edu

- Office Hours: Monday 2:30-3:30pm, Thursday 11:00am-12:00pm, or by appointment.
- Held in Engineering/Geosciences 2016 (The JMU Map Lab)

Course location: Engineering/Geosciences (Room 2010)

- Tuesdays and Thursdays 9:35-10:50 AM

Teaching Assistant:

Sydney DaPonte | dapontsc@dukes.jmu.edu

- Office hours: Tuesday 3-4:30pm
- Held in EnGeo Room 2005

Course Description

Spatial data are as abundant as they are powerful. Air traffic controllers rely on it to ensure safe aviation. Companies use it to evaluate market potential. Ecologists use it to protect species. The applications of spatial data are endless. However, spatial data must be processed using specific methods and tools in order to become actionable and accessible geographic information. This course offers an introduction to managing, processing, and presenting geographic information. Course material will draw from two sibling disciplines: Geographic Information Science (GIScience) and Cartography. Where GIScience is primarily concerned with the tools and techniques of geographic information systems (GIS), cartography focuses on how to make geographic information presentable by designing effective maps. Course periods will be structured as lectures and labs. Lectures will introduce key concepts including the nature of geographic information, data models, geographic data input, and spatial analysis. Labs will have students apply these concepts using professional GIS software (ArcGIS Pro). This will ensure that students not only understand the underpinning theory and concepts of GIScience and cartography but acquire key technical skills that are highly sought-after by employers. Overall, this course prepares students for advanced study in GIS, remote sensing, cartography, and spatial analysis.

Disclaimer Statement

Please note that as the semester progresses, I might make changes to this syllabus in order to improve the learning environment. Changes to the syllabus shall be given to you in written (paper or electronic) form.

Course Details

Credit Load

GEOG 215 is a 3-credit course with 3 hours of classroom contact per week. Students should expect to spend around 6 - 9 hours of self-directed study and GIS work outside of class per week.

Course Materials

All students taking a geospatial technologies course are required to purchase an external **solid state drive** (**not** a thumb drive) by the start of the second week of class. This drive should be over 500 GB in size, solid state in nature, and have a USB-C connection. Using a drive that does not meet these specifications may result in slower performance, corrupt data, and other issues. Suitable hard drives can be purchased at the JMU bookstore, as well as at discount department stores and electronics stores. Examples of appropriate SSDs: https://www.amazon.com/Netac-Portable-External-Aluminium-Android/dp/B088BTGZ43/?th=1

https://www.amazon.com/SSK-Portable-External-Transmission-Smartphone/dp/B0BGKXX9TK/

Readings draw from an open-source resource: https://saylordotorg.github.io/text_essentials-of-geographic-information-systems/. Reading topics may appear on quizzes. More information about the text can be found here: https://open.umn.edu/opentextbooks/textbooks/67

Other reading materials will be posted when necessary.

Software

The primary software programs for this course are ArcGIS Pro.

If you have any questions about this software, please let me know. ArcGIS are available on the desktop computers, and you can find instructions for installation on your personal device here: https://jamesmadisonuniversity.rightanswers.com/portal/app/portlets/results/viewsolution.jsp?solutionid=240912151617297

Course Mode

This is a resident course. It does not include an online or hybrid mode. Course sections are offered in-person only. All content, assignments, and grading will be delivered through Canvas.

Course Goals

Upon completion of this course, you should be able to:

- Describe and use fundamental cartographic principles to create a map.
- Compare and contrast different map projections.
- Define and describe uses of GIS in different fields.
- Use GIS to make decisions in a particular application problem.
- Integrate data from different sources to build a GIS to explore an issue of interest.

- Use distance and scale to analyze spatial data.
- Create, edit, and query databases.
- Analyze spatial relationships using points, lines, and polygons.
- Create and manipulate shapefiles and themes.
- Compare and contrast vector and raster data in GIS.
- Describe important social, ethical, and legal issues in cartography and GIS.

Assessment Policy

Grades are calculated using this set scale:

A-: 90 – 92%	A: 93 – 100%	
B-: 80 - 82%	B: 83 – 87%	B+: 88 – 89%
C-: 70 - 72%	C: 73 – 77%	C+: 78 – 79%
D-: 60 - 62%	D: 63 – 67%	D+: 68 – 69%
F: ≤59%		

The course will be out of a total of 1,000 points. Therefore, each percent of your grade constitutes 10 points. For example, a 6% lab will be out of 60 points.

Quizzes (24%; 240 points)

There is no midterm exam or comprehensive final exam.

There will be seven quizzes in this course. Each is worth 4%. A student's lowest quiz grade will be dropped. These quizzes are closed book/notes. Quizzes are not cumulative. Quizzes will be 15 minutes.

Make-up quizzes are not given unless previously arranged. If you anticipate needing to miss a quiz, **you must email me** or **talk to me in person** to schedule a makeup quiz **before the time of the quiz**. In your email, please specify some dates and times that you are available to take the makeup quiz. You must take the makeup quiz within 6 days of the initial quiz being administered. For example, a quiz that you missed on a Tuesday must be made up by the following Monday. Failure to take a quiz in the six-day timeframe will result in an automatic zero.

Lab Assignments (60%; 600 points)

There will be ten lab assignments in this course. Each is worth 6% of the course grade. These labs are where you apply concepts introduced in lecture to use GIS to create data, analyze spatial relationships, create maps, and more! Labs are due on the dates and times as indicated on Canvas.

Lab Assignment Grading

A rubric is provided for each lab assignment to indicate how it is graded. The penalty for a late lab assignment is 10% of the total score per day late. Late labs will not be accepted one week past their original due date. Submission of an assignment the day it is due, but after the deadline, count as one day late. Labs are due as indicated on Canvas. Technical complications (e.g., disk errors, ArcGIS Crashing) are not reason for extension; be sure to back-up copies of all of your work and version meticulously. Requests for grade changes must be submitted via email within **24 hours** of receiving your feedback.

Final Project (16%; 160 points)

There will be a final project that constitutes the culmination of your learning in the semester. The final project will allow you to apply all of what you have learned to create a single, spatial story via a Story Map. This project differs from the labs in that you will not be given step-by-step instructions on how to produce the map and are given more freedom on what you want to map. This project is meant to be something to show potential employers and showcase your expertise and skills in GIS/Cartography!

Attendance (Up to -100 points)

Missing **more than** 3 class sessions (4 or more) results in one percent of the overall course grade deducted for each course period missed, up to 10% of your total course grade. Please see the "Attendance" Course policy in the next section for more details about what counts as participation and excused absences.

Course Policies

Attendance

Please come to class! I understand that you have a lot going on in various aspects of your life be it personal, academic, or something else. But coming to class will help you learn more, connect with your classmates and me, and prepare you for a career upon graduating. One of my favorite parts with teaching is connecting with my students, so please show up to class!

Attendance will be recorded each class period. If you do not attend lectures, you will miss valuable content and activities. I do not just read off slides. If you do not attend labs, your map products will not be as good as your peers who do, and your grades will reflect that. Myself and the TA are there to help you so attend lab and take advantage of them!

In the event that you cannot attend class, you need to determine if your absence is excused or not. Certain events qualify as excused absences and do not count toward the 3 class sessions you are allowed to miss without penalty. Examples of an *unexcused* absence are the following: a personal trip (e.g., visit family, attend an event), personal extension of a university holiday or weekend, or club or intramural sports conflicts Please see Section 5.1 of JMU Academic Affairs Policy #16 for what qualifies as an official "excused absence."(https://www.jmu.edu/academic-affairs/_documents/policies/aapolicy-16.pdf). If you are missing class based on the conditions outlined in Section 5.1 of JMU Academic Affairs Policy #16, please email me about the nature of the absence, ensuring that the required notice is provided (when applicable).

For medical absences, I refer to Academic Affairs Policy #16, "faculty must grant excused absences for students who experience an illness and/or medical need, pursuant to the terms specified in their syllabus. Students are not required to disclose the underlying medical circumstance and faculty are not permitted to request such information." This policy is implemented in this course as follows: The instructor requires proof of medical need through a JMU Self-Care note for regular absences or dated non-medical documentation from a medical provider (e.g., hospital discharge papers with the patient's name but no medical information) for missed exams.

Please let me know before the absence if possible. Regardless of whether your absence is excused or not, I encourage you to reach out to myself, the TA, and your fellow students on what you missed.

Deadlines

Any job you get after graduating from JMU will require you to do things to meet deadlines. You should strive to complete assignments by their assigned due dates. The labs in the class take a lot of time, and falling behind on them will make it difficult to learn a lot in the class. Still, I understand that life happens. If you **absolutely** need an extension on an assignment, please reach out to me **before** the due date via email. In this email, you **must** outline a plan for finishing the assignment in a reasonable manner. I will not provide feedback for materials submitted over a week past their original deadline.

Academic Integrity

Academic integrity is fundamental to the learning at JMU. It involves honesty and ethical behavior in all aspects of your academic work. This includes, but is not limited to, doing assignments independently, using proper citations to avoid plagiarism, and taking exams without unauthorized assistance.

To uphold academic integrity in this course:

- Complete all coursework independently unless explicitly instructed otherwise.
- Use only permitted sources for your assignments and research.
- Refrain from sharing information about or from course quiz with others.
- Avoid using unauthorized aids during exams and assignments.

Violations of academic integrity will be taken seriously and may result in severe penalties. Refer to JMU's policy The JMU Honor Code for more information.

Artificial Intelligence Statement

With regard to the use of AI tools, like ChatGPT, there is a growing concern that these tools might become crutches— potentially hindering students from honing their writing skills and, more crucially, discouraging independent thought. These concerns are legitimate and demand our attention. At the same time, these tools can complement the learning experience. They can serve as catalysts for exploring and understanding complex concepts. Furthermore, they can assist in identifying and rectifying common writing errors that writers should ideally avoid. The policy for this course is designed to strike a balance. AI tools, including ChatGPT, are allowed for use, but subject to specific conditions: 1) Disclosure: Every assignment in this course must include a statement clarifying whether or not an AI tool has been utilized and, if so, in what capacity. 2) AI may not be used in any way to **generate** your writing, maps, images, etc. for you. This means that drafts of writings, summaries of your maps, and other written works may not be created using AI. Similarly, all maps created in this class must be through GIS software. 3) AI Statement: If you choose to incorporate an AI tool into your process, you are required to include a separate "AI Statement" within your assignment. Think of this statement as a brief reflection essay. It should be about 250 words in length. In it, you should not only describe your experience of using the AI tool but, more importantly, convincingly convey the significant insights and lessons you gained through the process. These insights should be on par with what you might have learned had you completed the assignment without AI assistance. The assignment will be graded in light of your explanations in the AI statement, thus it is important to persuade me that your use of AI tools provided a valuable learning experience. As a word of caution. It is essential to recognize that most generative AI programs, including ChatGPT, have their limitations. Please refrain from assuming the information provided by ChatGPT is infallible. Always verify the information, especially when it comes to references. ChatGPT has been known to generate fictional sources, making fact-checking an indispensable practice in your academic journey.

Long story short, don't cheat. This class is not excessively difficult by any means. Give it a try and I promise you'll learn some interesting (and useful!) stuff. Cheating does nothing but waste time (for both of us!) and the money you've invested in taking this course. You're here at JMU to learn—do it!

Etiquette and Classroom Conduct

To create a respectful and productive learning environment for everyone, please:

- Arrive on time and stay for the entire class period.
- Silence your phone and avoid unnecessary conversations during class.
- Refrain from eating or drinking in a disruptive manner.

Disruptive behavior may result in being asked to leave class.

Netiquette

Effective communication is essential for a successful course. When emailing your instructor or TA:

- Be respectful and clear in your message.
- Include your and course number (Geog 215) in the subject line.
- Allow 48 hours for a response, excluding weekends and holidays.
- Politely remind us after the 48 hour period has passed

Social Media and Course Materials

Unauthorized sharing of course materials on social media or other platforms is prohibited.

- Avoid posting course materials online without explicit permission.
- Respect the intellectual property of your instructor and classmates.

Violations of this policy may result in disciplinary action. All course content is protected by copyright law.

Change in Normal Campus Operations

During the semester, there may be days during which the class will not meet due to inclement weather. Please refer to the following website for details on JMU's policy on inclement weather: http://www.jmu.edu/JMUpolicy/1309.shtml. Changes to the course in the event of campus emergencies will be communicated via Canvas/email.

Inclusivity Statement

Inclusivity is a core value of CISE and the wider university community. This means fostering a diverse, welcoming, and equitable learning environment – something that we all contribute towards. This is an inclusive classroom. As such, we embrace the rich spectrum of diversity within our community and across the globe, spanning differences in race, ethnicity, faith, sexual orientation, gender, socio-economic background, accessibility, political ideologies, or any other distinction among individuals. It is our firm stance to unequivocally condemn acts of harassment or expressions of hate directed toward individuals or groups on the basis of these differences. We will actively work to ensure that everyone is welcome and is invited to share their perspectives.

There will be absolutely zero tolerance for **racist, sexist, homophobic, transphobic, classist, ableist or otherwise discriminatory remarks and hostile behavior of any kind**. We will respect one another, even if we do not agree, and it is everyone's right to be able to participate fully and meaningfully in a learning environment free of such behavior or attitudes. If there is any reason such a space has been compromised for you, please know my door is open for an honest and non-judgmental conversation about this and I will make every effort to address it.

To learn more, visit the JMU Inclusive Excellence website https://www.jmu.edu/cise/inclusive-excellence.shtml.

Students with Diverse Abilities

All of us learn in different ways and, depending on how those ways are applied, with varying degrees of success. If you know of any factors in your life that may hinder your ability to learn up to your potential in this course, please notify me at once. In order to receive consideration for formal accommodations provided by the university, you need to contact the Office of Disability Services (Wilson Hall, Room 107, www.jmu.edu/ods, 540-568-6705). Disability Services will provide you with an Access Plan Letter that will verify your need for services and make recommendations for accommodations to be used in the classroom. Once you have presented me with this letter, you and I will sit down and review the course requirements, your disability characteristics, and your requested accommodations to develop an individualized plan, appropriate for the course. NOTE: You are under no obligation to disclose your disability to me, I simply need to know the best ways to support you in your learning. However, it is your (the student's) responsibility to inform the instructor of any special needs before the end of the second week of classes.

JMU abides by Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act, which mandate reasonable accommodations be provided for students with documented disabilities.

Dropping and Adding Courses

Students are responsible for registering for classes and for verifying their class schedules on e-campus.

Keep the following deadlines in mind:

- The deadline for adding without academic unit permission or dropping without a "W" grade through MyMadison is **January 30th**.
- The deadline for withdrawing from the university with cancellation of tuition charges and refund is **February 10th**.
- The deadline to drop a regular semester class with a "W" grade or to change the course credit option is **March 27th**. Corresponding tuition charges will apply for all classes assigned a grade of "W."

Corresponding tuition charges will apply for all classes assigned a grade of "W." No exceptions will be made to these deadlines.