

Geography 3314: Cartography

CRNs: 86066, 86067

Course Syllabus – Fall 2025

Combined Lecture Meeting: (Mon/Wed) 9:05 - 9:55AM – Wallace 234

Lab Meeting Times:

86067 Section: (Mon/Wed) 10:10 – 11:25 AM Cheatham 220 (M), 217 (W)

86066 Section: (Mon/Wed) 12:20 – 1:35 PM Wallace 101

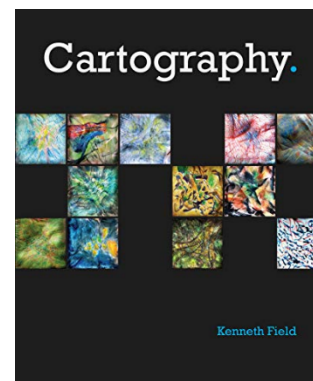
	Email	Office Loc.	Days	Office Hours
Stewart Scales	scales@vt.edu	Wallace 211	Tues/Thurs	9 - 10AM online
Emma Dilic	emmadilic@vt.edu	Wal. Atrium	Fri	10AM - 12PM
Ryan Morel	ryanmorel@vt.edu	Wal. Atrium	Tues/Thurs	11AM - 12PM
Kate Nix	kanix@vt.edu	Wal. Atrium	Tues/Thurs	11AM - 12PM

Course Objective:

This course is a broad overview of the science and art of cartography. Throughout the semester, we will focus on building a skillset of map design methods. During this process, you will gain skills necessary to create maps from scratch; we will focus on digital, static products that emphasize thematic cartography, and the ArcGIS Pro platform. At the end of this course, you will take with you the necessary skills for map production, a broad understanding of GIS, and an eye for effectively designed maps.

Required Items:

- Textbook: *Cartography*. Kenneth Field, ESRI Press. Available in the bookstore & online.
- Computer with ArcGIS Pro 3.x installed for final project work. (PDF on Canvas will outline this process for both Windows and Mac users).
- A flash drive or external SSD must be brought to every lab session.
 - 8GB or larger
 - Recommended: USB 3.0 or higher
 - Drives with faster read and write speeds will provide a better and more reliable experience.



Requirements and Assessment:

The course grade will be based on assignments of variable weights. Grading will be on the straight scale.

Statute of limitations: you may contest a grade for up to a week after it is posted; after that time, the grade is final.

Unit Tests (5) & Practical Exams (2)	30%
Lab Assignments (Part 1)	15%
Lab Assignments (Part 2)	20%
Final Project	20%
Attendance	15%

Unit Tests (5) & Lab Practical (2) (30% of total grade, located in Assignments):

Five unit tests will be administered during the course. Each will consist of topics and concepts discussed in class and covered in the assigned reading for each day/section. *An average reading pace of 6 pages per class period or 3 pages per day will keep you on track* The unit tests are not strictly cumulative and focus on the current lecture and reading topics. Question formats may consist of (but not be limited to) multiple choice, descriptive and short answer segments, matching, and image interpretation. Unit tests will be taken on your own at home; they are open for several days and will be timed.

Two lab practical exams will be given during lab session times (one mid-semester and one before the semester's end). These are designed to test your knowledge & skill retention of basic GIS functions we practice daily in the lab assignments, which would also be a part of any entry-level GIS job.

I do not give alternate assignments except in the case of a verifiable emergency or a situation with documentation from the University. If you must reschedule an exam or assignment due to a time conflict, I will do my best to work with you to find a mutual time. Please let me know two weeks in advance if alternate scheduling is required.

Lab Assignments (35% of grade, located in Canvas Files, submit in Assignments):

During lab sessions, most days will have an exercise that builds cartographic concepts; some labs will be directly related to class material while others will focus on a specific skill set. Most of this time is dedicated to completing assigned lab work; **attendance is both critical and required** to receive design feedback on your maps before submitting them. You must work on these labs outside of our meeting times and practice the skills daily to be proficient!

The first half of the semester's labs will count 15% of this grade category and the second half will count for 20% of the grade category. This reflects student retention of basic map concepts & repeated design items.

Late Work: Late work will not be accepted for credit; it is your responsibility to have all assignments submitted on time to receive a grade. All deadlines in the course are 'hard' deadlines that cannot be extended. All assignments will be submitted online during a specified time window and cannot be submitted late. Labs that go over time and are not submitted during the meeting time will be due by 12PM the following day. Please see page 4 for more detailed information.

Final Project (20% of grade, summary in Canvas Files)

A larger, group mapping project will conclude the last weeks of the semester. This project involves constructing a large format outdoor recreation map from scratch for a county of your choice and is designed to apply all aspects of this course toward producing a publishable cartographic product. Full details for this will be released approximately 1 month before the semester ends.

Attendance (15% of grade)

Attendance is expected throughout the semester and will be taken during every lab session and at random during lectures. If you are unable to attend a class or lab, please email me or the TA(s) ahead of time to let us know of the absence. Please do not come to class or lab if you are ill – missing class due to an illness will never count against your attendance grade; see page 4 for additional information. Beyond the grade aspect, poor attendance is often reflected in map design choices because so many aspects of the course can't be gleaned from lecture slides alone.

Student Responsibilities:

As a student in cartography, it is your responsibility to attend your assigned lab session, the combined lecture, and to complete all work on time. Many of the lab meetings consist of a short project to be completed during the lab session – **attending the session to ask for feedback will greatly help your grade.** Please do not attend lab during the other time slot(s) if you miss a section, as seating and our bandwidth for feedback is often limited.

Use of Canvas & Email:

All participants of this course must use the Canvas system to receive communication from me, for dissemination of course material, for grade review, and submitting assignments. You are responsible for looking at our course site on a regular basis and keeping up to date with materials and assignments. **Please check your email/Canvas Announcements daily, shortly before the meeting times in case any last-minute information is sent out.** I am available by email most days during working hours but will not respond after hours or on weekends.

Honor Code, Accommodations, Attendance, & Other Information:

1) The Undergraduate Honor Code pledge that Virginia Tech undergraduate students must abide by states: *“As a Hokie, I will conduct myself with honor and integrity at all times. I will not lie, cheat, or steal, nor will I accept the actions of those who do.”*

Students enrolled in this course are responsible for abiding by the undergraduate Honor Code on each assignment and/or exam. A student who has doubts about how the Honor Code applies to any assignment is responsible for obtaining specific guidance from the course instructor before submitting the assignment for evaluation. Students are strongly discouraged from misusing unauthorized online sources including generative artificial intelligence outlets. Students are strongly encouraged to consult their faculty members regarding the use of such outside materials as the misuse of these sources may constitute a violation of the Honor Code. Ignorance of the rules does not exclude any member of the University community from the requirements and expectations of the Honor Code. See additional information about the [Honor Code](https://www.honorsystem.vt.edu/) (<https://www.honorsystem.vt.edu/>).

Honor Code Pledge for Assignments: The Virginia Tech honor pledge for assignments is as follows: **“I have neither given nor received unauthorized assistance on this assignment.”**

In this course, the use of any generative AI tools is strictly prohibited for all graded assignments, exams, and assessments. All work must represent your own independent effort and original thinking. The use of AI tools to draft, edit, summarize, or generate content is considered unauthorized assistance and a violation of the Honor Code. Violations will be reported and handled in accordance with Virginia Tech’s Honor Code procedures. If you are ever uncertain about the use of AI, it is your responsibility to ask the instructor before proceeding.

2) Virginia Tech welcomes students with disabilities into the University’s educational programs. The University promotes efforts to provide equal access and a culture of inclusion without altering the essential elements of coursework. If you anticipate or experience academic barriers that may be due to disability, please contact the Services for Students with Disabilities ssd@vt.edu, or visit www.ssd.vt.edu. If you have an SSD accommodation letter, please meet with me privately during office hours as early in the semester as possible to discuss implementing your accommodations. You must give me reasonable notice to implement your accommodations, generally 5 - 10 business days.

3) As your instructor, I strive to make the atmosphere in this course to be welcoming, collaborative, and inclusive, consistent with Virginia Tech’s Principles of Community. **By enrolling in this course, students**

recognize that harassment of any kind (sexual or otherwise) is not tolerated. This applies to all on- and off-campus activities associated with this course. Please contact me if you have questions about this expectation or concerns about the inclusivity of your course experience. While instructors must report certain incidents of harassment, confidential campus resources are also available. Students are encouraged to see the Student Conduct link for additional information and resources (<https://www.studentconduct.vt.edu/>).

4) I respectfully request that you do not use computers or electronics during the lecture portion of this class.

Course Attendance, Late Policies, and Absences:

Because of a wide variation in class sizes and assignment types, I adopt the same deadline policies in all my classes:

Notification of absence:

If you are aware that you will miss a class or assignment due to a college-specific item such as university-related travel, conference attendance, sports, etc., I will need **email notification** of your absence at least **1 week** in advance of the absence.

In the case of an illness and a missed in-person class/lab, I will need **email notification** of your absence **prior to the start of the class period.**

In both cases, you are responsible for making up any missed work and recapping the missed lecture material from the slides posted online and notes from your classmates. Course notes are not available from the instructor and all lecture slides are posted on Canvas after the lecture topic concludes.

Documentation of absence

In the case of a known absence in advance, an external information source is required for documentation of your absence – this can be a confirmation email for a conference, a note from your coach, or other written confirmation of your attendance at the event stating the date(s) of the absence.

In the case of an illness (especially for multiple missed classes), I *may* request verification that you were seen by a medical provider in relation to the illness verifying that the illness prevented you from submitting work on time, or request you verify your absence with the Dean of Students, whose offices contact the faculty directly.

Work Submission

In all cases of absences, the student is responsible for submitting scheduled work on time or ahead of the posted deadlines on Canvas unless otherwise approved by the instructor in writing. If you cannot be present to submit a hard copy assignment, please email it to me on or before the deadline. Because all assignments are open and/or announced for multiple days, late work is not accepted unless verified through the Dean of Students for an illness/absence. All other forms of advanced notice of absence do not relieve the student of assignment deadlines unless prior authorization is secured between the student and instructor in writing.

With written notification and documentation as outlined above, I am always happy to work with you toward an acceptable solution to submitting work, and a correctly documented absence as outlined above will never count against your daily attendance grade.

Clear and proactive communication is key to making this process run efficiently. I am very limited when it comes to retroactive information and cannot honor the above items if notification of your absence arrives after the start of a lecture, after assignments have closed, and/or after deadlines have passed.

Other Items:

Failure to sign up for a lab group correctly will result in a 0 for the individual who did not submit a map. It is your responsibility to join the instructor-assigned group to receive credit for work on later labs.

Tentative Course Outline (changes may occur and will be announced!)

Day	Date	Class	Lecture Topic	Lab Assignment	Reading Pages & Test Blocks
M	25-Aug	1	Intro to the Course, Syllabus Overview	Introduction to the Labs	112, 14, 378, 110, 180, 156
W	27-Aug	2	Basics of Mapping	Practice Lab/Basics of ArcGIS Pro	154, 240, 134, 524, 144, 478
M	1-Sep	3	No Class - Labor Day	No Lab - Labor Day	44, 82, 86, 176, 294, 198
W	3-Sep	4	History of Cartography	Lab 1 - Getting Started	264, 404, 322, 392, 300, 538
M	8-Sep	5	History of Cartography (2)	Start Lab 2 - Digitizing	218, 286, 194, 422, 32, 118
W	10-Sep	6	Making Maps With GIS 1	Finish Lab 2 - Digitizing	122, 456, 458, 68, 500, 222, 418
M	15-Sep	7	Making Maps With GIS 2	Lab 3 - Data Entry	426, 328, 266, 174, 146, 466
W	17-Sep	8	Making Maps With GIS 3	Start Lab 3.5 - Current Events Map	336, 340, 10, 296, 228
M	22-Sep	9	Making Maps With GIS 4	Finish Lab 3.5 - Current Events Map	290, 162, 26, 128
W	24-Sep	10	Projections 1 - Intro & Indicatrix	Lab 4 - Projections	370, 142, 292
M	29-Sep	11	Projections 2 - Cylindrical	Start Lab 5 - Choropleth Mapping	304, 520
W	1-Oct	12	Projections 3 - Conic	Finish Lab 5 - Choropleth Mapping	22
M	6-Oct	13	Projections 4 - Planar & Mathematical	Omni Globe/Manual Cartography	
W	8-Oct	14	No Lecture	Lab Practical 1	
M	13-Oct	15	Dot Mapping 1	Start Lab 6 - Dot Maps	36, 70, 358, 130, 102, 190, 372
W	15-Oct	16	Dot Mapping 2	Finish Lab 6 - Dot Maps	124, 274, 20, 168, 184, 396
M	20-Oct	17	Graphic Design 1	Start Lab 7 - Graduated Symbols	246, 516, 470, 50, 216, 78, 166
W	22-Oct	18	Graphic Design 2	Finish Lab 7 - Graduated Symbols	18, 100, 272, 318, 326, 388
M	27-Oct	19	Graphic Design 3	Start Lab 8 - Proportional Symbols	298, 244, 436, 468, 84, 472
W	29-Oct	20	Isonlines (short), Start Text & Typography	Finish Lab 8 - Proportional Symbols	150, 172, 48, 202, 268, 428
M	3-Nov	21	Text 2	Lab 9 - Flow Mapping	440, 344, 346, 348, 350, 476, 480
W	5-Nov	22	Color 1	Start Lab 10 - Labeling	62, 148, 220, 402, 494, 12, 410
M	10-Nov	23	Color 2	Finish Lab 10 - Labeling	200, 4, 56, 60, 66, 502, 374, 224
W	12-Nov	24	Catch Up/Review Session	Hillshade/DEM Tutorial	454, 230, 376
M	17-Nov	25	No Lecture	Lab Practical 2	
W	19-Nov	26	No new class material	Final Project Work & Feedback	
M	24-Nov		No Class - Thanksgiving Break		
W	26-Nov		No Class - Thanksgiving Break		
M	1-Dec	27	No new class material	Final Project Work & Feedback	
W	3-Dec	28	No new class material	Final Project Work & Feedback	
M	8-Dec	29	No new class material	Final Project Work & Feedback	
W	10-Dec	30	No new class material	Submit Final Projects (11:59PM)	

Assigned Reading Pages:

Test 1		Test 2		Test 3		Test 4		Test 5	
Page	Title	Page	Title	Page	Title	Page	Name	Page	Name
112	Defining maps & Cartography	218	How maps are made	290	Map projections	36	Beginning	5	Color in cart.
14	Anatomy of a map	286	Map aesthetics	162	Families of projections	70	Consistent denotation	148	Elements of color
378	Purpose of maps	194	Graphicacy	370	Properties of a projection	358	Points	220	HSV
110	Map Design	422	Simplicity vs complexity	142	Earth's shape	130	Dot density	402	Saturation
180	Functional Cartography	32	Balance	26	Assessing distortion	102	Data density	494	Value
156	Ethics	118	Different strokes	128	Distortion in a projection	190	Graduted symbol maps	12	All the colors
154	Error and bias	456	Symbolization	292	Decisions	372	Proportional symbol maps	410	Seeing color
240	Integrity	458	Symbols	304	Measuring directions	124	Dimensional perception	200	Grayscale
134	Dysfunctional cartography	68	Visual variables	520	Web Mercator	274	Lines	4	Additive & subtractive
524	Who is cartography?	500	Varying symbols	22	Aspect of a projection	20	Areas	56	Color charts
144	Earth's vital measurements	222	Hue			168	Flow maps	60	Color deficiency
478	Types of maps	418	Shape			298	Maps for children	66	Color schemes
44	Cartographic process	426	Size			244	Isarithmic maps	502	Vignettes
82	Craft	328	Orientation			246	Isochorone maps	374	Proximity in design
86	Critique	266	Legends			516	Weather maps	224	Hypsometric Tint
176	Form and Function	174	Foreground & Background			470	Topo maps	454	Styling shaded relief
294	Map transformation	146	Elegance			50	Choropleths	230	Imagery as a background
198	Graticules, grids, neatlines	466	Thematic maps			216	Hierarchies	376	Pseudo natural maps
264	Layouts and grids	336	Pattern fills			18	Arbitrary data classification	150	Elements of type
404	Scale & resolution	340	Pictograms			100	Data classification	172	Fonts and type families
322	Old is New Again	10	Aligning coord. systems			272	Measurement levels	48	Choosing type
392	Reference maps	122	DEMs			318	Nominal Data	202	Guidelines for lettering
300	Maps Kill	296	Map traps			326	Ordinal Data	268	Lettering
538	Zeitgeist	228	Illuminated contours			388	Interval & Ratio data	428	Sizing type
						184	Generalization	440	Spacing letters & words
						396	Resolution	344	Placing type
						436	Smoothing	346	Placing areas
						468	Threshold of perception	348	Placing lines
						78	Contrast	350	Placing points
						84	Crispness	476	Type color
						472	Transparency	480	Typographic maps
						166	Flourish		