

GEOG 381/571: Cartography and GIS – Course Syllabus

Instructor Information

Dr. Michaela Buenemann (Professor)



- Office: NMSU Main Campus, Breland Hall 139
- [Email](#)
- Phone: (575) 646-6493
- Advising Hours: Tue, 13:00-14:45; Wed, 9:00-12:00 & 13:00-15:00; Thu, 13:00-14:45; by appointment. To ensure my time is all yours when we meet, either in person in Breland Hall 139 or via [Adobe Connect](#) in Canvas, please [sign up for an advising session](#).
- Response time: 1 business day to email; 3 business days to phone calls

Aaron Adams (TA for official lab sessions on Tuesdays 10:00-14:00 and Fridays 11:30-15:30, Breland Hall 192)

- Office: Breland Hall 144; Email: aaron27@nmsu.edu; Phone: (575) 646-3509
- Advising Hours: Mon, Tue, Wed, 13:00-14:00; by appointment; in person in Breland Hall 144 or via [Adobe Connect](#) in Canvas

Coury Dorn (TA for grading)

- Office: Breland Hall 142; Email: couryd@nmsu.edu; Phone: (575) 646-3307
- Advising Hours: Tue & Thu, 11:30-13:00; by appointment; in person in Breland Hall 142 or via [Adobe Connect](#) in Canvas

Course Introduction

Course Overview

- Course prefix and number: GEOG 381/571
- Course title: Cartography & GIS
- Department: [NMSU Department of Geography](#)
- Semester: Fall 2018
- Credit hours: 4
- Course access: [online via Canvas Learning Management System](#)
- Meeting days and times: this course may be completed fully online and asynchronously; however, the professor and TAs will also be available in person or online during the advising hours noted above; in addition, the TAs will run special lab hours for this course and general lab hours for all students in person in the computer lab in Breland Hall 192 as noted in this [Breland 192 Lab Schedule](#).

- [Teaching philosophy](#)

Course Description

This course will introduce you, primarily through lectures and labs, to the fundamental concepts and methods of cartography. Rather than to focus on the analysis and interpretation of maps (GEOG 281: Map Use), this course will emphasize the design and production of functional and aesthetically pleasing maps. Such maps are indispensable for effectively communicating findings obtained using Geographic Information Science and Technology (GIS&T), which includes Geographic Information Systems (e.g., GEOG 481/578: Fundamentals of Geographic Information Systems) and Remote Sensing (e.g., GEOG 373/573: Introduction to Remote Sensing). The fundamental principles of cartography (e.g., scale, projections, symbolization) that we will cover have changed little over the last few decades. The discipline has moved increasingly toward automation, however, and we will acknowledge this trend through assignments that require you to apply concepts discussed in the lectures using a commercial software package ([ArcGIS](#)) in the labs. That is, we will provide you with a solid foundation of cartographic principles in the lectures and introduce you to the computer-assisted application of those principles in the labs.

Course Learning Outcomes

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

1. explain key cartographic concepts and methods,
2. analyze and interpret maps,
3. evaluate the quality of maps, and
4. create functional and aesthetically pleasing maps (= the ultimate learning outcome).

Course Delivery Method

This course will be completely online and asynchronous, with optional in-person synchronous meetings. You may complete assignments in any order, but we strongly recommend that you complete them in the carefully designed order outlined in the [Course Schedule](#). You may submit assignments ahead of their due dates; [late work](#) will not be accepted except in unusual circumstances.

Course Organization

This is a fast-paced course with a steep learning curve for many students. The course introduces a variety of interrelated concepts and methods relevant to cartography, geographic information systems, remote sensing, geography, and other sciences concerned with mapping. It also introduces you to [ArcGIS](#) software. We will deal with new topics every week and each is treated more or less separately in the readings, lectures, and labs. However, you can only become an excellent cartographer, if you understand all concepts and methods discussed in this course and how they relate. That is, you cannot create a high-quality map if you understand the principles of thematic map symbols only; you also need to be able to choose an appropriate scale and projection for your map, apply statistical concepts properly, and so forth. It is thus crucial that you always keep up with all course materials. To help you stay on top of things, we organized the course into five main [Course Modules](#), each of which will allow you to learn about several

related themes using readings, lecture slides and videos, readiness assessment tests, lab exercises, and other miscellaneous materials. For more information about the organization of the course, check out the [Course Map](#), the [Course Schedule](#), and the Course Tour Video on the [Course Introduction](#) page. For more information about the nature of assignments in the course, read the [Assignments and Criteria](#) section below.

Required Courses, Skills, Hard- and Software, Browsers, and Textbook

Prerequisites and Co-requisites

There are no prerequisites or co-requisites for this course.

Skills

Taking an online course requires a number of skills. At a minimum, you will need to meet certain technology responsibilities to complete the work for this course. If you have questions about technical requirements for the course, please contact us immediately. To begin in this course, you must be able to:

- obtain access to an internet connection, preferably broadband, and a working computer for the duration of this course;
- proficiently use Microsoft Office applications (see the [Microsoft Office Training Center](#));
- conduct searches and find resources on the Internet (see the [NMSU Library](#), [Research Help for Students](#), and [Internet Tutorials](#));
- send and receive NMSU emails and email attachments in and out of class (see [NMSU email](#));
- use Canvas tools (see the [Canvas Student Guide](#));
- install software on your computer;
- maintain backups of all your course work (see [5 Ways to Back Up Your Data](#));
- follow technical instructions to accomplish new tasks; and
- demonstrate a willingness and ability to learn new skills.

Computer Hardware & Software

To participate fully in this course, you will need access to the following technologies:

- Windows or Macintosh desktop or laptop computer with internet access as well as microphone and speakers (built-in or external headset);
- [Windows Virtual Machine](#) (to run ArcGIS software) — Mac users only
- [Canvas Learning Management System](#) (Note that Canvas is not fully supported in mobile devices; i.e., while there is a free Canvas mobile app, its functionality is currently limited. To ensure full Canvas functionality, access Canvas on your computer.)
- [Adobe Connect](#)
- [Microsoft Office](#) (for reading and creating Microsoft Word, PowerPoint, and Excel files)
- [Adobe Acrobat Reader](#) (for reading PDF files)
- [Google Account](#) (for collaborating using Google Docs; note: you do not have to have a Gmail account – you can link your Google account to any email address)

- [ArcGIS Desktop 10.6](#) (for mapmaking; free for students — we will give you a license code during our first Adobe Connect meeting)

Web Browsers

Use any of the following browsers to access Canvas. Please remember to update the web browser you are using on a regular basis.

- [Chrome](#) (recommended)
- [Firefox](#)
- [Safari](#)

Textbook

The best textbook to help you learn in this course is: Dent, B. D., J. Torguson, and T. W. Hodler. 2009. *Cartography: Thematic Map Design*. 6th ed. Boston: McGraw-Hill (Relevant pages from this textbook are indicated for each unit on our Canvas pages.). However, this textbook is not required (i.e., it is optional) and you may find other introductory cartography textbooks equally valuable.

Communication

Canvas Course Management System Website

This course will be offered completely online via [Canvas](#), where you will have access to all course materials (e.g., lectures and labs); your grades; as well as communication tools such as Announcements, Messages, Discussions, Collaborations, and Adobe Connect. To access these resources, simply [log in to your Canvas account](#) and click the link for this course. Canvas is critical element of this course and you are required to review its contents regularly. If you encounter problems related to Canvas, please contact us immediately.

Email and Canvas Messages

You can reach us at the NMSU email addresses provided under [Instructor Information](#) above or via Canvas Messages. Note that your NMSU email account is the official means of communicating with the university. Information critical to your success at NMSU is delivered to you via this account, and you are expected to follow rules and policies provided to you via this communication method. Any email from you to us should be sent either through your official NMSU email account or through Canvas Messages. Please be advised that due to privacy and security concerns, we are unable to respond to emails from or about students that do not originate from an official NMSU email address. Unless we are away from the office with limited access to email, we will respond to your messages within one business day. Similarly, we expect you to respond to our emails in a timely manner. So, please access your NMSU email and Canvas accounts frequently.

Announcements

We will use the Announcements tool in Canvas to send time sensitive and regular information to the entire class. To ensure you receive this information the moment it is posted, set your

notification preferences in Canvas to “right away”. To do so, in Canvas, go to Profile > Notifications > Announcements and change the setting “Notify me right away.”

Advising Hours

Our advising hours are provided under [Instructor Information](#) above. During these hours, we will be available in person in our offices or online in our Adobe Connect rooms as noted under [Instructor Information](#) above. To meet with Dr. Buenemann, [sign up for an advising session](#) with her prior to the meeting. If none of her ten weekly advising hours work for you, please [email her](#) to set up an appointment during an alternative time. To meet with the TAs, simply drop by their physical or virtual offices during their office hours or a pre-arranged time.

Phone Calls

Phone calls are not our preferred mode of communication and our response times to voice messages may be up to three business days. Our phone numbers are provided under [Instructor Information](#) above.

Expectations

What You Can Expect From Us

We will be available to you during our advising hours and scheduled appointments as well as via NMSU email and Canvas messages. Don't be shy and contact us as soon as ambiguities, problems, or worries arise. We will take all of your questions, comments, and concerns seriously and respond to you as promptly and as specifically as possible. We will do our very best to provide you with a high-quality learning experience, grade assignments fairly, and offer feedback on your work within one week of turning it in. We reserve the right to make changes to course materials, assignments, and policies to better accommodate your learning needs. Any changes made will be published as soon as possible via Canvas Announcements and will not adversely affect your workload or grade. We encourage each of you to be both teacher and learner in this course. To that end, we like to encourage interactions among participants and do not wish to be "sages on the stage."

What We Expect From Ourselves and You

Enrollment in this course and acceptance of this syllabus is your contract constituting acceptance of all NMSU policies and codes as well as all specific guidelines outlined in this syllabus. We will do our very best to facilitate learning (i.e., to help you achieve the [Course Learning Outcomes](#) stated above)—we will always prepare and present class materials to the best of our abilities; give you tasks that will help you better understand key concepts and methods; and encourage cooperative, student-centered learning. You are responsible for learning itself. In addition, we expect all participants in the course to follow the netiquette conventions below.

Netiquette

Netiquette is a set of conventions that promote polite and effective interactions over various

kinds of networks such as live chat systems, internet discussion boards, or mailing lists. Our online course expectations for netiquette are:

- Always be polite and respectful in online correspondences.
- Remember that the concept of "politeness" is defined for us by the families and cultures of which we are a part. What is considered polite communication in one family or culture may be impolite in another. Sometimes you may inadvertently seem impolite or feel that someone else was being impolite. Talk it out instead of assuming the person meant to be rude.
- Pay attention to your word choice. Be sensitive to others.
- Do not attack. Don't flame someone. It is possible to disagree with an idea without personally attacking the person espousing the idea.
- Listen gently to others' views. Listen actively.
- Think critically. Seek clarity of meaning and understanding.
- Question ideas, not people.
- Begin all messages with a proper greeting that includes the name of the person/s you are contacting and conclude all messages with a closing that includes your name.
- Use spell proper spelling, grammar, and punctuation.
- Avoid using all caps (All caps is considered shouting.).
- Use emoticons and acronyms to convey your emotional intent and avoid misunderstandings.
- Attempt to see things from other people's perspectives.
- Use relevant supporting information.

Online Preparation

This is a 4-credit hour course that will require approximately 10 hours of work per week. In addition, it will have to suit your style of learning. To determine if distance education is the right choice for you, see if you have the [characteristics expected of students enrolled in online courses](#).

Grading Policy

Grade Components and Weights

Your final course grade will be based on the points you earn on the following assignments.

Grade Components Table for Undergraduate Students (GEOG 381)

| Assignments | Units | Points | Weight |
|-------------|-------|--------|--------|
| Exams | 4 | 340 | 34.0% |
| Labs | 12 | 360 | 36.0% |
| iACTs | 10 | 100 | 10.0% |
| tACTs | 10 | 200 | 20.0% |
| Total | 36 | 1,000 | 100.0% |

Grade Components Table for Graduate Students (GEOG 571)

| Assignments | Units | Points | Weight |
|--------------|-------|--------|--------|
| Exams | 4 | 340 | 27.2% |
| Labs | 12 | 360 | 28.8% |
| iACTs | 10 | 100 | 8.0% |
| tACTs | 10 | 200 | 16.0% |
| Term Project | 1 | 250 | 20.0% |
| Total | 37 | 1,250 | 100.0% |

Grading Scale

Your final course letter grade will be based on the following fractional scale.

Grading Scale Table

| Grade | Percentage | GPA |
|-------|-------------|-----|
| A+ | > 100% | 4.0 |
| A | 95% to 100% | 4.0 |
| A- | 90% to 94% | 3.7 |
| B+ | 87% to 89% | 3.3 |
| B | 84% to 86% | 3.0 |
| B- | 80% to 83% | 2.7 |
| C+ | 77% to 79% | 2.3 |
| C | 74% to 76% | 2.0 |
| C- | 70% to 73% | 2.0 |
| D+ | 67% to 69% | 1.0 |
| D | 64% to 66% | 1.0 |
| D- | 60% to 63% | 1.0 |
| F | < 60% | 0.0 |

Assignments and Criteria

You will complete four types of assignments for this course: team activities (tACTs), individual activities (iACTs), labs, and exams. In addition, if you are a graduate student, you will complete a term project for this course. All assignments are intended a) to help you acquire the learning outcomes (LOs; i.e., descriptions of things you should be able to do) of individual units, modules, and the course as a whole and b) to help us assess the extent to which this actually happened. Recall from the [Course Learning Outcomes](#) section above that you should be able to do four major things upon completion of this course: explain key cartographic concepts and methods; analyze and interpret maps; evaluate the quality of maps; and create functional and aesthetically pleasing maps. As you can see, being able to do these things requires both conceptual and practical knowledge and skills in cartography.

Throughout the course, we will provide you with **readings, lecture slides and videos**, and **other miscellaneous materials** to help you learn the more conceptual aspects of the course. These materials promote a rather passive mode of learning, however, and do not provide you or us

with feedback about how much you have actually learned. This is where the tACTs come in. The **tACTs** are open book homework assignments that challenge you to actively engage with the course material through collaboration with your team members. The tRATs thus provide you with opportunities to learn course material interactively and cooperatively through critical discussions with your peers. The tACTS give you and us an indication as to what does or does not make sense to you and allow us all to take corrective actions as needed. The **iACTs** are opportunities for you to learn more about how our principles of cartography and GIS are applied in the real world to solve a broad range of problems related to human, environmental, and coupled social-ecological systems. The iACTS thus allow you to apply and solidify the knowledge and skills that you pick up in lectures, labs, and other course materials.

The **lab exercises** are designed to help you learn the more practical aspects of the course. The first ten labs provide background materials that emphasize the close linkage between the conceptual and practical aspects of the course as well as step by step instructions for making maps in ArcGIS software. The labs thus allow you to develop the skills necessary for making maps on your own, an ability that you will demonstrate in the last two labs of the semester as well as the final exam. TAs will be available throughout the semester to help you troubleshoot lab problems as needed. Finally, the **exams** are incentives for you to (re)learn class materials and means for us to assess your learning in this course. The first three exams are proctored, closed book, and focused on the conceptual aspects of the course. The last exam is non-proctored, open book, and focused on the practical aspects of the course. That said, all course elements are intricately linked as noted in the [Course Organization](#) section above.

If you have any questions about the purpose of instructional materials and their relationships to each other, please let us know. Note that we will evaluate all assignments within one week of their respective due dates. Each assignment category is described further below. For even more information, see the specific assignments in [Canvas](#).

iACTs: There will be ten iACTs. All iACTs are required to earn the maximum number of points in this course (i.e., 1,000 points). iACTs will be individual efforts worth 10 points each and graded based on the percent of iACT problems you attempted to solve (i.e., you get points for effort). The iACTs will account for a combined total of 100 points (10% and 8% of the final course grade for undergraduate and graduate students, respectively).

tACTs: There will be ten tACTs. All tACTs are required to earn the maximum number of points in this course (i.e., 1,000 points). tACTs will be team efforts worth 20 points each and graded based on the quality with which your team completed all tACT tasks (i.e., each problem is worth a certain number of points and your team earns no, partial, or full credit depending on the completeness and correctness of the solution). All members of a given team will initially receive the same grade for a given tACT (i.e., the grade earned by the team). However, tACT grades will be adjusted three times during the semester using peer evaluations, which assess each individual team member's contributions to the success of the team. For example, if a team earned 18 points on a tACT and team members A, B, and C earned peer evaluation scores of 0.8, 0.9, and 1.0, respectively, then the adjusted tACT grades for team members A, B, and C will be 14.4, 16.2, and 18 points, respectively (i.e., 80%, 90%, and 100% of team grade, respectively). It is thus in your own best interest to always contribute as much as possible to the tACTs. The tACTs will account for a combined total of 200 points (20% and 16% of the final

course grade for undergraduate and graduate students, respectively).

Labs: There will be twelve lab exercises, each accounting for 30 points of your final course grade or for a combined total of 360 points (36% and 28.8% of the final course grade for undergraduate and graduate students, respectively). Labs will be graded based on the quality with which you completed all lab tasks (i.e., each task is worth a certain number of points and you earn no, partial, or full credit depending on the completeness and correctness of your work). We invite you to collaborate with others to solve lab problems, but your lab submissions must clearly be your own work. All labs are required to earn the maximum number of points in this course (i.e., 1,000 points).

Exams; Proctored Mid-Term Exams and Non-Proctored Final Exam: There will be four exams, all of which are required to earn the maximum number of points in this course (i.e., 1,000 points). Exams 1, 2, 3, and 4 will account for 60, 75, 90, and 115 points, respectively, and thus for a combined total of 340 points (34% and 27.2% of the final course grade for undergraduate and graduate students, respectively). Each exam will be cumulative, assessing your learning since the beginning of the semester. All exams will be individual efforts. Exams will be graded based on the quality with which you completed all exam tasks (i.e., each task is worth a certain number of points and you earn no, partial, or full credit depending on the completeness and correctness of your work). The first three exams will each be up to 90 minutes long and proctored. You have three options for completing these exams. 1) If you live within a 75-mile radius of Las Cruces, you may have your exams proctored in Breland Hall, Room 194. This is at no cost to you. 2) If you live more than 75 miles from Las Cruces, you may arrange to have your [exams proctored at an approved offsite location](#), as described in greater detail on the [NMSU Office of Distance Education](#) (ODE) website. Complete the online [Proctored Testing Form](#) and work with the ODE exam proctor to finalize the arrangements. The costs charged by the offsite exam proctoring site or proctor are your responsibility. Make the arrangements as far in advance as possible as last-minute arrangements are stressful for all involved. 3) You may take a [proctored exam with ProctorU](#). It is your responsibility to pay for this service. To incur the lowest cost, schedule your ProctorU exams well in advance of the exam deadlines. Moreover, to ensure the successful completion of your exams, be sure to conduct a tech check prior to each exam. Independent of how you choose to complete the first three exams, bring to each a photo ID (e.g., Campus ID or Driver's License), a pencil, scrap paper, a ruler, and a simple graphing [calculator](#) (i.e., one that would be allowed on AP exams). No other materials will be allowed. Your scrap paper will be collected after each exam. Finally, as described in detail on the [Map Competition and Awards \(Final Exam\)](#) webpage in Canvas, Exam 4 will require you to create an original, functional, and aesthetically pleasing bivariate quantitative thematic map and to participate in the final exam map competition. The exam schedule is as follows:

| Exam # | Onsite in Breland Hall 194 on the NMSU Main Campus in Las Cruces | Offsite or Proctor U |
|--------|--|-------------------------------|
| 1 | Feb 22, 8:00 – 12:00 | Feb 18, 00:01 – Feb 22, 23:59 |
| 2 | Mar 15, 8:00 – 12:00 | Mar 11, 00:01 – Mar 15, 23:59 |
| 3 | Apr 12, 8:00 – 12:00 | Nov 8, 00:01 – Apr 12, 23:59 |
| 4 | n/a | n/a |

Note that onsite exams are due by 12:00 and offsite and Proctor U exams by 23:59 on the days

indicated above (i.e., exams need to be completed and submitted by these times).

Term Projects (Grad and Honors Students Only!): Grad and honors students will be required to complete a research poster as part of their course work (20% of final grade).

Curving of Grades

Individual assignments and tests will not be curved (↑ or ↓). We *may* make adjustments of the final letter grade after an assessment of the class curve at the end of the term. We consider class participation and improvement over the term as justification for discounting a grade that is uncharacteristically lower than others.

Grades on Canvas

You may use Canvas to keep track of grades that you earned for specific activities (e.g., an exam or a lab) as an individual or as part of a team. However, do not use summary grades in Canvas to assess your overall class performance as these grades are inaccurate. As described below and discussed online, your team grades will be adjusted upward or downward based on peer evaluations, which Canvas does not take into account. To help you keep track of your actual overall grade, use [this Excel spreadsheet](#).

Incomplete Grades

An I (Incomplete) grade will be assigned only if you are unable to complete the course due to circumstances beyond your control (e.g., documented illness, documented death, or crisis in your immediate family) that develop after the last day to withdraw from the course. An I grade will not be used to avoid assigning of D, F, U, or RR grades for marginal or failing work.

Late Work

Work not received by the deadline will not be graded and given 0 points, except in unusual circumstances. We have three major reasons for not accepting late work. First, it is difficult to keep up with students who turn things in late and determine just how much to dock an assignment. Our time is better spent on improving course materials and providing better feedback. Second, there will be no confusion concerning when assignments are due. Third, imposing hard deadlines will prepare you for the real world. To ensure you meet all deadlines, allow extra time for glitches in computer hardware and software, internet connectivity, etc.; i.e., start working on assignments early and try to submit them ahead of time. If you are unable to submit your work on time due to extenuating circumstances, please discuss the situation with us well before anything is due so that we can develop solutions that support you.

Attendance

Because this course is fully online and asynchronous, we do not require attendance. However, if you are unable to submit an assignment on its due date due to university-sponsored activities, work-related events, or cultural or religious observances, please make arrangements to submit it prior to the due date.

Class Withdrawals

Withdrawal from this course is solely your responsibility; we will not drop you from this class

under any circumstances. If you no longer wish to be enrolled in this course, you must withdraw from it. If you are still on the class roll at the end of the semester, you will receive a grade based on the work submitted.

Honors Students

If you wish to have this course count as an Honors course, you may initiate the process by completing the [Course by Contract form](#). We will assign you additional work that will permit you to gain Honors credits for this course. These credits will count as upper division credits towards the accumulation of 18 credits needed to graduate with University Honors. For additional information on pursuing the Honors recognition at graduation, contact the Honors College at 575-646-2005 or [email Dean Chaiken](#). Completed Contract forms must be submitted in person to the Honors College no later than one week after the beginning of each semester.

Academic and Non-Academic Integrity

Enrollment in this course and acceptance of this syllabus is your contract constituting acceptance of all University policies regarding academic and non-academic integrity. You are expected to comply fully with the NMSU Student Code of Conduct, which defines academic misconduct, non-academic misconduct, and the consequences or penalties for each. The Student Code of Conduct is available in the [NMSU Student Handbook](#). Students who are judged to be guilty of [academic misconduct](#), which includes cheating, plagiarism, and other forms of academic dishonesty, will be reported as required by [NMSU policy](#).

Student Support

NMSU is committed to ensuring all students have the support they need to be successful and expand their educational horizons.

Academic Learner Services Support

- Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act Amendments Act (ADAAA) covers issues relating to disability and accommodations. If you have questions or need an accommodation in the classroom (all medical information is treated confidentially), contact: Trudy Luken, Director; [Student Accessibility Services \(SAS\)](#), Corbett Center Student Union Room 208; Phone: (575) 646-6840; [E-mail](#).
- NMSU, in compliance with applicable laws and in furtherance of its commitment to fostering an environment that welcomes and embraces diversity, does not discriminate on the basis of age, ancestry, color, disability, gender identity, genetic information, national origin, race, religion, retaliation, serious medical condition, sex (including pregnancy), sexual orientation, spousal affiliation, or protected veteran status in its programs and activities, including employment, admissions, and educational programs and activities. Inquiries may be directed to the Laura Castille, Executive Director, Title IX and Section 504 Coordinator, [Office of Institutional Equity \(OIE\)](#), P.O. Box 30001, 1130 E University Avenue, Las Cruces, NM 88003; Phone: (575) 646 3635; TTY: (575) 646 7802 (TTY); [E-mail](#).

- Title IX prohibits sex harassment, sexual assault, intimate partner violence, stalking, and retaliation. For more information on discrimination or Title IX, or to file a complaint, contact Laura Castille, Executive Director, Title IX and Section 504 Coordinator, [Office of Institutional Equity \(OIE\)](#), P.O. Box 30001, 1130 E University Avenue, Las Cruces, NM 88003; Phone: (575) 646 3635; TTY: (575) 646 7802 (TTY); [E-mail](#).
- [NMSU Police Department](#): (575) 646-3311
- [NMSU Police Victim Services](#): (575) 646-3424
- [NMSU Counseling Services](#): (575) 646-2731
- [NMSU Dean of Students](#): (575) 646-1722
- For Any On-Campus Emergencies: 911

Student Support Services

- The [Math Success Center](#) provides students continuing support with math supplemental instruction, tutoring, and testing.
- The [Writing Center](#) offers free services to all NMSU students through one-on-one consultations at any stage in the writing process, from understanding assignment directions to revising final drafts. The Writing Center is staffed by graduate assistants who teach undergraduate writing courses in the English Department and offers online consultations for distant learners. Consultants advise students on aspects of proofreading and editing, but do not provide editing services.
- The [NMSU Student Success Center](#) offers a variety of programs and services, including Freshman Year Experience, Campus Tutoring Service, Learning & Study Skills Workshops, Peer, and TRIO Student Support Services. The Student Success Center also serves students through Career Services and Financial Literacy.
- The [NMSU Center for Academic Advising and Student Support](#) offers centralized advising for undergraduate students. We also encourage both undergraduate and graduate students to meet with [faculty in the NMSU Department of Geography](#) concerning any questions and concerns.
- [NMSU Financial Aid and Scholarship Services](#) offers timely and understandable information about financial aid and scholarship options to all students.
- The [NMSU Registrar's Office](#) supports all students at NMSU; [registering for classes](#) at NMSU requires three steps: academic advising, registering for classes, and paying the tuition and fee bill.
- [Other resources for NMSU](#) students include [tutoring services](#), the [library](#), [career services](#), the [Aggie Health and Wellness Center](#), and more. Numerous webpages provide information on [distance education](#) for online students.

Technical Support

The ICT Customer Service Center is equipped to deal with all of your information technology (IT) and telecommunications needs at NMSU. The ICT Customer Service Center hours of operation are from 8:00 am until 5:00 pm Monday through Friday Mountain Time. Please feel free to contact them at (575) 646-1840 or via [e-mail](#). You can also go to the [Student Technology Help](#) web page and [Student Resources](#) located at the [Canvas](#) web page for additional information on

Canvas. For assistance with ArcGIS, contact your TA or Dr. Buenemann as [described above](#).

VPAT Statements

A Voluntary Product Accessibility Template, or VPAT, is a standardized form developed by the Information Technology Industry Council to show how a software product meets key regulations of Section 508 of the Rehabilitation Act. Below are the VPATs for the primary tools in this course.

- [Microsoft Products](#)
- [Apple Products](#)
- [Canvas](#)
- [Adobe Products](#)
- [Google Products](#)
- [ESRI Products](#)

Privacy Policies

We take protecting and honoring your privacy very seriously at NMSU. The privacy policies for tools used in this course are noted below.

- [Microsoft Products](#)
- [Apple Products](#)
- [Canvas](#)
- [Adobe Products](#)
- [Google Products](#)
- [ESRI Products](#)

Important Dates

You may add courses through Thursday, 17 January 2019 without instructor permission and through Monday, 28 January 2019 with instructor permission. Late registration fees will apply for courses added after Wednesday, 16 January 2019. The deadlines for dropping this course without and with a “W” are Friday, 1 February 2019, and Friday 15 March 2019, respectively. You may withdraw from the university (withdraw from all classes) through Friday, 3 May 2019.

Syllabus Modifications Statement

We reserve the right to make changes to course materials, assignments, and policies to better accommodate your learning needs. Any changes made will be published as soon as possible via Canvas Announcements and will not adversely affect your workload or grade. For the most recent version of the syllabus, always consult Canvas.

GEOG 381/571: Cartography and GIS

The ultimate learning outcome of this course is for you to be able to create functional and aesthetically pleasing maps. To achieve this outcome, this course offers you learning opportunities through lectures, labs, and other activities. Key topics are largely treated separately at the beginning of the course. Toward the end of the course, we will focus increasingly on synthesis, however. This is because a map will only become functional and aesthetically pleasing after all key issues have been considered in an integrative fashion.

Module 0: Getting Started

0.1 Course
Introduction

0.2 Course
Syllabus

0.3 Course Map

0.4 Course
Schedule

0.5 Student
Introductions

0.6 Teams

Module 1: Fundamentals of Cartography

1.1 History of
Cartography

1.2 Principles of
Cartography

1.3 The Map
Design Process

Module 2: Map Scale and Spatial Reference Systems

2.1 Map Scale and
Generalization

2.2 Coordinate
Systems

2.3 Map
Projections

2.4 Cartography
Review Games

2.5 Exam #1

Module 3: Nature and Representation of Geographic Data

3.1 Nature of
Geographic Data

3.2 Thematic Map
Symbols

3.3 Principles of
Typography and
Color

3.4 Descriptive
Statistics

3.5 Data
Classification

3.6 Cartography
Review Games

3.7 Exam #2

Module 4: Quantitative Thematic Map Types

4.1.a Choropleth
Maps

4.1.b Dot Density
Maps

4.1.c Proportional
Symbol Maps

4.1.d Isarithmic
and Surface Maps

4.1.e Cartograms

4.1.f Flow Maps

4.2 Cartography
Review Games

4.3 Exam #3

Module 5: Map Creation, Evaluation, and Publishing

5.1 Analog and
Digital
Cartography

5.2 Map Creation
and Evaluation

5.3 Map
Competition and
Awards (Final
Exam)

Course Learning Outcomes

1. Explain key cartographic concepts and methods.
2. Analyze and interpret maps.
3. Evaluate the quality of maps.
4. Create functional and aesthetically pleasing maps.



0 0.2 0.4 0.8 1.2 1.6 Kilometers

Organ
Mountains

Rock Springs
Canyon

Rucker
Canyon



| 0. Getting Started (30 Points, 3 Hours) | | | | | Points (Hours) |
|---|---|---|--|--|----------------|
| Topics | Module Learning Outcomes | Resources | Activities (Interactions) | Assessments | |
| 0.1 Course Introduction 0.2 Course Syllabus 0.3 Course Map 0.4 Course Schedule 0.5 Participant Introductions 0.6 Teams | <ul style="list-style-type: none"> - Navigate the online course. - Describe the course's learning outcomes, organization, and policies. - Meet the instructor, teaching assistants, and other students. - Define your team's constitution. - Set up the course technologies. | <ul style="list-style-type: none"> - Instructor's introduction video - Canvas how-to videos - Course map, syllabus, and schedule - Canvas profile - Canvas discussion board - Adobe Connect information - ArcGIS Desktop information - Google Docs information - Team constitution *.docx - ACT #1 *.docx | <ul style="list-style-type: none"> - Watch videos. - Review course syllabus, map, and schedule. - Complete Canvas profile, discussion page subscriptions, and student introductions. - Complete team constitution. - Complete iACT and tACT #1. - Set up Adobe Connect, ArcGIS Desktop, and Google. - Get textbook. - Meet with Dr. B. - (S-I, S-TA, S-S) | <ul style="list-style-type: none"> - Complete Canvas profile, discussion page subscriptions and posts, student introductions - Complete team constitution - Graded iACT and tACT #1 - Complete Adobe Connect meeting with Dr. B. | 30 (3) |

| 1. Fundamentals of Cartography (60 Points, 11.5 Hours) | | | | | Points (Hours) |
|--|--|---|--|--|----------------|
| Topics | Module Learning Outcomes | Resources | Activities (Interactions) | Assessments | |
| 1.1 History of Cartography | 1.1.1 Discuss models, maps, and globes (CLO 1). 1.1.2 Trace the history of cartography in about five sentences (CLO 1). 1.1.3 Discuss the first law of geography (CLO 1) | <ul style="list-style-type: none"> - History of Cartography *.pptx - Lecture videos - ACT #2 *.docx | <ul style="list-style-type: none"> - Watch videos and review slides. - Begin drafting iACT and tACT #2. - (S-I, S-S) | <ul style="list-style-type: none"> - Formative feedback on ACT #2 upon request | 0 (1.5) |
| 1.2 Principles of Cartography | 1.2.1 Define geography, cartography, and GIS (CLO 1). 1.2.2 Differentiate between different map types (CLO 1). 1.2.3 Discuss the three stages of map use (CLOs 1 and 2). 1.2.4 Explain the importance of visualization, communication, and ethics in cartography (CLOs 1 and 4). 1.2.5 Perform basic GIS operations in the ArcGIS GUI (CLO 2 and 4). | <ul style="list-style-type: none"> - Textbook pages 1-11, 13-16, and 18-20 - Principles of Cartography *.pptx - Lecture videos - ACT #2 *.docx - Lab #1: Getting Started with ArcGIS | <ul style="list-style-type: none"> - Watch videos, read textbook pages, and review slides. - Continue drafting iACT and tACT #2. - Complete Lab #1. - (S-I, S-TA, S-S) | <ul style="list-style-type: none"> - Formative feedback on ACT #2 upon request - Graded Lab #1 | 30 (7) |

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|-----------------------------------|---|---|---|---------------------------|--------|
| 1.3 The Map Design Process | 1.3.1 Summarize the qualities of map that is functional and aesthetically pleasing (CLOs 1, 3, and 4). | <ul style="list-style-type: none"> - Textbook pages 203-223 - The Map Design Process *.pptx | <ul style="list-style-type: none"> - Watch videos, read textbook pages, and review slides. - Complete iACT and tACT #2. | - Graded iACT and tACT #2 | 30 (3) |
| | 1.3.2 The map designer's job is to filter and select map elements and to arrange these elements into a functional and aesthetically pleasing composition that enlightens the map user. Elaborate on what is meant by this statement (CLOs 1, 3, and 4). | <ul style="list-style-type: none"> - Lecture videos - ACT #2 *.docx | <ul style="list-style-type: none"> - (S-I, S-S) | | |

| 2. Map Scale and Spatial Reference Systems (150 Points, 14.5 Hours) | | | | | Points (Hours) |
|--|---|--|---|--|-----------------------|
| Topics | Module Learning Outcomes | Resources | Activities (Interactions) | Assessments | |
| 2.1 Map Scale and Generalization | 2.1.1 Explain how an increase or decrease of map scale affects the mapped earth area, information detail, and degree of generalization in a map (CLOs 1, 3, and 4). | <ul style="list-style-type: none"> - Textbook pages 11-13, 16-18, 33-35, 76-78 - Map Scale and Generalization *.pptx - Lecture videos | <ul style="list-style-type: none"> - Watch videos, read textbook pages, and review slides. - Begin drafting iACT and tACT #3. - Complete Lab #2. | <ul style="list-style-type: none"> - Formative feedback on ACT #3 upon request - Graded Lab #2 | 30 (3) |
| | 2.1.2 Review strategies employed in cartographic generalization (CLOs 1, 3, and 4). | <ul style="list-style-type: none"> - ACT #3 *.docx - Lab #2: Map Scale and Generalization *.docx | <ul style="list-style-type: none"> - (S-I, S-TA, S-S) | | |
| | 2.1.3 Convert between verbal, graphic, and fractional scales (CLOs 1 and 2). | | | | |
| | 2.1.4 Measure distances on maps (CLOs 1 and 2). | | | | |
| 2.2 Coordinate Systems | 2.2.1 Distinguish between ellipsoids and datums (CLO 1). | <ul style="list-style-type: none"> - Textbook pages 23-33 - Coordinate Systems *.pptx | <ul style="list-style-type: none"> - Watch videos, read textbook pages, and review slides. | - Formative feedback on ACT #3 upon request | 0 (3) |
| | 2.2.2 Compare and contrast spherical and plane coordinate systems (CLOs 1, 2, 3, and 4). | <ul style="list-style-type: none"> - Lecture videos - ACT #3 *.docx | <ul style="list-style-type: none"> - Continue drafting iACT and tACT #3. - (S-I, S-S) | | |

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|-------------------------------------|---|--|---|---|-------------|
| 2.3 Map Projections | 2.3.1 Discuss the purpose, parameters, and properties of map projections (CLOs 1, 2, 3, and 4). | <ul style="list-style-type: none"> - Textbook pages 37-61 - Map Projections *.pptx - Lecture videos | <ul style="list-style-type: none"> - Watch videos, read textbook pages, and review slides. - Complete iACT and tACT #3. | <ul style="list-style-type: none"> - Graded iACT and tACT #3 - Graded Lab #3 | 60 (5.5) |
| | 2.3.2 Outline the basic steps for selecting the most appropriate projection for a given mapping project (CLOs 1 and 4). | <ul style="list-style-type: none"> - ACT #3 *.docx - Lab #3: Coordinate Systems and Map Projections *.docx | <ul style="list-style-type: none"> - Complete Lab #3. - (S-I, S-TA, S-S) | | |
| | 2.3.3 Change the spatial reference system of data frames and data layers in ArcGIS (CLO 4). | | | | |
| 2.4 Cartography Review Games | 2.4.1 N/a | <ul style="list-style-type: none"> - Cartography Review Games #1 - Peer Evaluation #1 *.docx | <ul style="list-style-type: none"> - Review concepts and methods covered thus far. - Participate in Cartography Review Games #1 - Complete Peer Evaluation #1. - (S-I, S-S) | <ul style="list-style-type: none"> - Formative feedback on Cartography Review Games #1 - Peer Evaluation #1 Scores and Comments | 0 (1.5) |
| | | | | | |
| 2.5 Exam #1 | 2.5.1 N/a | <ul style="list-style-type: none"> - Exam #1 | <ul style="list-style-type: none"> - Complete Exam #1. - (S-I) | <ul style="list-style-type: none"> - Graded Exam #1 | 60 (1.5) |

| 3. Nature and Representation of Geographic Data (225 Points, 28 Hours) | | | | | Points (Hours) |
|---|--|---|---|---|-----------------------|
| Topics | Module Learning Outcomes | Resources | Activities (Interactions) | Assessments | |
| 3.1 Nature of Geographic Data | 3.1.1 Identify the following, both in existing maps and for future maps you may be asked to create: feature type, data form, data measurement level, and time (CLOs 1, 2, 3, and 4). | <ul style="list-style-type: none"> - Textbook pages 63-70 - The Nature of Geographic Data *.pptx - Lecture videos - ACT #4 *.docx | <ul style="list-style-type: none"> - Watch videos, read textbook pages, and review slides. - Begin drafting iACT and tACT #4. - Begin working on Lab #4. - (S-I, S-S) | <ul style="list-style-type: none"> - Formative feedback on ACT #4 upon request | 0 (3) |

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| 3.2 Thematic Map Symbols | 3.2.1 Discuss sources for geospatial data and the nature and importance of associated metadata (CLOs 1, 2, 3, and 4). | <ul style="list-style-type: none"> - Textbook pages 70-78 - Thematic Map Symbols *.pptx - Lecture videos | <ul style="list-style-type: none"> - Watch videos, read textbook pages, and review slides. - Continue drafting iACT and tACT #4. | <ul style="list-style-type: none"> - Formative feedback on ACT #4 upon request - Graded Lab #4 | 30 (6) |
| | 3.2.2 Discuss the function and use of each of the major visual variables in maps (CLOs 1, 2, 3, and 4). | <ul style="list-style-type: none"> - ACT #4 *.docx - Lab #4: Acquisition and Preprocessing of Geographic Data *.docx | <ul style="list-style-type: none"> - Complete Lab #4. - (S-I, S-TA, S-S) | | |
| | 3.2.3 Differentiate between the three major types of cartographic error and list examples for each (CLOs 1, 3, and 4). | | | | |
| | 3.2.4 Acquire and preprocess geospatial data for mapping in ArcGIS (CLO 4). | | | | |
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| 3.3 Principles of Typography and Color | 3.3.1 Discuss the function of typography and color in maps (CLO 1). | <ul style="list-style-type: none"> - Textbook pages 226-244, 246-264 | <ul style="list-style-type: none"> - Watch videos, read textbook pages, and review slides. | <ul style="list-style-type: none"> - Graded iACT and tACT #4 | 60 (7.5) |
| | 3.3.2 Explain which typography and color models would be most suitable for a given mapping application (CLOs 1, 2, 3, and 4). | <ul style="list-style-type: none"> - Principles of Typography *.pptx - Principles of Color *.pptx - Lecture videos | <ul style="list-style-type: none"> - Complete iACT and tACT #4. - Complete Lab #5. - (S-I, S-TA, S-S) | <ul style="list-style-type: none"> - Graded Lab #5 | |
| | 3.3.3 Use advanced labeling and symbolization tools in ArcGIS to create a complex reference map (CLO 4). | <ul style="list-style-type: none"> - ACT #4 *.docx - Lab #5: Color and Typography in Map Design *.docx | | | |
| | | | | | |
| 3.4 Descriptive Statistics | 3.4.1 Describe the major objective and purpose of descriptive statistics (CLOs 1, 2, 3, and 4). | <ul style="list-style-type: none"> - Textbook pages 80-85 - Descriptive Statistics *.pptx - Lecture videos | <ul style="list-style-type: none"> - Watch videos, read textbook pages, and review slides. - Begin drafting iACT and tACT #5. - (S-I, S-S) | <ul style="list-style-type: none"> - Formative feedback on ACT #5 upon request | 0 (3) |
| | 3.4.2 Discuss graphs, tables, and statistics of relevance to cartography (CLOs 1, 2, 3, and 4). | <ul style="list-style-type: none"> - ACT #5 *.docx | | | |
| 3.5 Data Classification | 3.5.1 Describe the major objective and purpose of data classification (CLOs 1, 2, 3, and 4). | <ul style="list-style-type: none"> - Textbook pages 85-98 - Data Classification *.pptx - Lecture videos | <ul style="list-style-type: none"> - Watch videos, read textbook pages, and review slides. - Complete iACT and tACT #5. - (S-I, S-TA, S-S) | <ul style="list-style-type: none"> - Graded iACT and tACT #5 - Graded Lab #6 | 60 (5.5) |
| | 3.5.2 Explain key differences between major classification schemes (CLOs 1, 2, 3, and 4). | <ul style="list-style-type: none"> - ACT #5 *.docx - Lab #6: Generation and Symbolization of Geographic Data *.docx | <ul style="list-style-type: none"> - Complete Lab #6. | | |
| | 3.5.3 Generate and symbolize geospatial data in ArcGIS (CLO 4). | | | | |
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| 3.6 Cartography Review Games | 3.6.1 N/a | <ul style="list-style-type: none"> - Cartography Review Games #2 - Peer Evaluation #2 *.docx | <ul style="list-style-type: none"> - Review concepts and methods covered thus far. - Participate in Cartography Review Games #2 - (S-I, S-S) | <ul style="list-style-type: none"> - Formative feedback on Cartography Review Games #2 | 0 (1.5) |
| 3.7 Exam #2 | 3.7.1 N/a | <ul style="list-style-type: none"> - Exam #2 | <ul style="list-style-type: none"> - Complete Exam #2. - (S-I) | <ul style="list-style-type: none"> - Graded Exam #2 | 75 (1.5) |

| 4. Quantitative Thematic Map Types (270 Points, 32.5 Hours) | | | | | Points (Hours) |
|---|--|---|---|--|----------------|
| Topics | Module Learning Outcomes | Resources | Activities (Interactions) | Assessments | |
| 4.1.a Choropleth Maps | 4.1.1 Define each of the following six quantitative thematic map types: choropleth map, dot density map, proportional symbol map, isarithmic map, cartogram, and flow map (CLO 1). | <ul style="list-style-type: none"> - Textbook pages 101-117 - Choropleth Maps *.pptx - Lecture videos - ACT #6 *.docx - Lab #7: Choropleth Maps *.docx | <ul style="list-style-type: none"> - Watch videos, read textbook pages, and review slides. - Begin drafting iACT and tACT #6 - Complete Lab #7. - (S-I, S-TA, S-S) | <ul style="list-style-type: none"> - Formative feedback on ACT #6 upon request - Graded Lab #7 | 30 (5.5) |
| 4.1.b Dot Density Maps | 4.1.2 Discuss the strengths and weaknesses of each of these map types (CLOs 1, 3, and 4). 4.1.3 Explain when it is in/appropriate to use each of these map types (CLOs 1, 3, and 4). | <ul style="list-style-type: none"> - Textbook pages 119-130 - Dot Density Maps *.pptx - Lecture videos - ACT #6 *.docx | <ul style="list-style-type: none"> - Watch videos, read textbook pages, and review slides. - Continue drafting iACT and tACT #6. - (S-I, S-S) | <ul style="list-style-type: none"> - Formative feedback on ACT #6 upon request | 0 (3) |
| 4.1.c Proportional Symbol Maps | 4.1.4 Outline, in chronological order, the general steps required for creating each of these map types (CLOs 1 and 4). 4.1.5 Discuss symbolization considerations for each of these map types (CLOs 1, 3, and 4). 4.1.6 Describe legend design for each of these map types (CLOs 1, 3, and 4). | <ul style="list-style-type: none"> - Textbook pages 131-148 - Proportional Symbol Maps *.pptx - Lecture videos - ACT #6 *.docx - Lab #8: Dot Density and Proportional Symbol Maps *.docx | <ul style="list-style-type: none"> - Watch videos, read textbook pages, and review slides. - Complete iACT and tACT #6. - Complete Lab #8. - (S-I, S-TA, S-S) | <ul style="list-style-type: none"> - Graded iACT and tACT #6 - Graded Lab #8 | 60 (5.5) |
| 4.1.d Isarithmic and Surface Maps | 4.1.7 Evaluate the functionality of a given quantitative thematic map (CLOs 3 and 4). 4.1.8 Analyze and interpret a given quantitative thematic map (CLO 2). 4.1.9 Create functional and aesthetically | <ul style="list-style-type: none"> - Textbook pages 150-166 - Isarithmic and Surface Maps *.pptx - Lecture videos - ACT #7 *.docx - Lab #9: Isarithmic & Surface Maps *.docx | <ul style="list-style-type: none"> - Watch videos, read textbook pages, and review slides. - Begin drafting iACT and tACT #7. - Complete Lab #9. - (S-I, S-TA, S-S) | <ul style="list-style-type: none"> - Formative feedback on ACT #7 upon request - Graded Lab #9 | 30 (5.5) |

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|-------------------------------------|--|---|--|---|-------------|
| 4.1.e Cartograms | pleasing choropleth, dot density, proportional symbol, isarithmic, cartogram, and flow maps (CLO 4). | <ul style="list-style-type: none"> - Textbook pages 168-185 - Cartograms *.pptx - Lecture videos - ACT #7 *.docx | <ul style="list-style-type: none"> - Watch videos, read textbook pages, and review slides. - Continue drafting iACT and tACT #7. - (S-I, S-S) | <ul style="list-style-type: none"> - Formative feedback on R ACT AT #7 upon request | 0 (3) |
| 4.1.f Flow Maps | | <ul style="list-style-type: none"> - Textbook pages 188-200 - Flow Maps *.pptx - Lecture videos - ACT #7 *.docx - Lab #10: Cartograms and Flow Maps *.docx | <ul style="list-style-type: none"> - Watch videos, read textbook pages, and review slides. - Complete iACT and tACT #7. - Complete Lab #10. - (S-I, S-TA, S-S) | <ul style="list-style-type: none"> - Graded iACT and tACT #7. - Graded Lab #10. | 60 (5.5) |
| 4.2 Cartography Review Games | 4.2.1 N/a | <ul style="list-style-type: none"> - Cartography Review Games #3 - Peer Evaluation #2 *.docx | <ul style="list-style-type: none"> - Review concepts and methods covered thus far. - Participate in Cartography Review Games #3 - Complete Peer Evaluation #2 - (S-I, S-S) | <ul style="list-style-type: none"> - Formative feedback on Cartography Review Games #3 - Peer Evaluation #2 Scores and Comments | 0 (3) |
| 4.3 Exam #3 | 4.3.1 N/a | <ul style="list-style-type: none"> - Exam #3 | <ul style="list-style-type: none"> - Complete Exam #3. - (S-I) | <ul style="list-style-type: none"> - Graded Exam #3 | 90 (1.5) |

| 5. Map Creation, Evaluation, and Publishing (265 Points, 21.5 Hours) | | | | | Points (Hours) |
|---|---|--|---|---|-----------------------|
| Topics | Module Learning Outcomes | Resources | Activities (Interactions) | Assessments | |
| 5.1 Analog and Digital Cartography | 5.1.1 Compare and contrast desktop and commercial printing (CLOs 1, 3, and 4). 5.1.2 Differentiate between static, animated, and interactive virtual maps (CLOs 1, 3, and 4). 5.1.3 Discuss how internet and monitor characteristics affect virtual map design and how associated constraints may be overcome (CLOs 1, 3, and 4). | <ul style="list-style-type: none"> - Textbook pages 268-278, 280-296 - Printing Fundamentals and Prepress Operations *.pptx - Virtual and Web Mapping *.pptx - Lecture videos - ACT #8 *.docx | <ul style="list-style-type: none"> - Watch videos, read textbook pages, and review slides. - Begin drafting iACT and tACT #8. - (S-I, S-S) | <ul style="list-style-type: none"> - Formative feedback on ACT #8 upon request | 0 (3) |

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|--|---|--|---|--|-------|
| 5.2 Map Creation and Evaluation | 5.2.1 Analyze and interpret maps (CLO 2) | - Lab #11: Make Your Own Map #1 *.docx | - Complete iACTs and tACTs #8, #9, and #10. | - Graded iACTs and tACTs #8, 9, and 10 | 150 |
| | 5.2.2 Evaluate the quality of maps (CLO 3). | - Lab #12: Make Your Own Map #2 *.docx | - Complete Labs #11 and 12. | - Graded Labs #11 and 12 | (17) |
| | 5.2.3 Independently create quantitative thematic maps of your choice in ArcGIS (CLO 4). | - Student maps | - (S-I, S-TA, S-S) | | |
| | | - ACT #8 *.docx | | | |
| | | - ACT #9 *.docx | | | |
| | | - ACT #10 *.docx | | | |
| 5.3 Map Competition and Awards | 5.3.1 Evaluate quantitative thematic maps (CLO 3). | - Final Exam *.docx | - Submit Final Exam | - Graded Final Exam | 115 |
| | | - Student Maps *.pdf | - Rank maps. | - Peer Evaluation #3 | (1.5) |
| | | - Map Ranking *.xlsx | - Celebrate the winners. | Scores and | |
| | | - Peer Evaluation #3 *.docx | - Complete Peer Evaluation #3. | Comments | |
| | | - Course Evaluation *.docx | - Complete Course Evaluation. | | |
| | | | - (S-I, S-S) | | |

GEOG 381/571: Cartography and GIS – Course Schedule

The course schedule below summarizes key topics and activities as well as due dates for assignments for the entire semester. In addition, it shows the semester weeks during which we suggest you work on specific topics and assignments. The calendar below shows how these weeks relate to specific calendar days, weeks, and months. Note that assignments are typically due by 23:59 (11:59 pm) Mountain Time (iACTs on Mondays, tACTs on Wednesdays, and Labs and Exams on Fridays) during all weeks except for the first and last weeks of the semester. Note also that topics and modules are not necessarily confined to specific weeks; rather, there is some overlap among them. For additional information concerning activities and assignments, please see the [individual module pages](#). For a listing of assignments by due dates, see the [Canvas Syllabus page](#).

| January | | | | | | | |
|---------|----|---|----|---|----|---|----|
| # | Su | M | Tu | W | Th | F | Sa |

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2 20 21 22 23 24 25 26
3 27 28 29 30 31

| February | | | | | | | |
|----------|----|---|----|---|----|---|----|
| # | Su | M | Tu | W | Th | F | Sa |

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5 10 11 12 13 14 15 16
6 17 18 19 20 21 22 23
7 24 25 26 27 28

| March | | | | | | | |
|-------|----|---|----|---|----|---|----|
| # | Su | M | Tu | W | Th | F | Sa |

7
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10 17 18 19 20 21 22 23
11 24 25 26 27 28 29 30
12 31

| April | | | | | | | |
|-------|----|---|----|---|----|---|----|
| # | Su | M | Tu | W | Th | F | Sa |

12
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14 14 15 16 17 18 19 20
15 21 22 23 24 25 26 27
16 28 29 30

| May | | | | | | | |
|-----|----|---|----|---|----|---|----|
| # | Su | M | Tu | W | Th | F | Sa |

16
17 5 6 7 8 9 10 11

| Week | Topic | Activity |
|---------------------------|-------|----------|
| Module 0: Getting Started | | |

- | | | |
|-----|---|---|
| 1-2 | 0.1 Course Introduction 0.2 Course Syllabus 0.3 Course Map 0.4 Course Schedule 0.5 Student Introductions 0.6 Teams | <ul style="list-style-type: none"> - Watch introductory videos. - Review course syllabus, map, and schedule. - Subscribe to class discussion pages by 23:59, Fri, 1/18. - Complete Canvas profile by 23:59, Fri, 1/18. - Introduce yourself to others by 23:59, Fri, 1/18, respond to them by 23:59, Mon, 1/21, and respond once more by 23:59, Wed, 1/23. - Post or answer muddy point by 23:59, Mon, 1/23. - Set up Adobe Connect and meet with Dr. B. by 23:59, Fri, 1/25. - Set up Google in Canvas and communicate with your team in time to complete tACT #1 by Fri, 1/25. - Complete team constitution (part of tACT #1) by 23:59, Fri, 1/25. |
|-----|---|---|

| Week | Topic | Activity |
|---|--------------------------------|---|
| | | <ul style="list-style-type: none"> - Complete iACT #1 by 23:59, Wed, 1/23. - Complete tACT #1 by 23:59, Fri, 1/25. - Install ArcGIS in time to complete Lab #1 by Fri, 2/8. |
| Module 1: Fundamentals of Cartography | | |
| 2-3 | 1.1 History of Cartography | <ul style="list-style-type: none"> - Watch videos and review slides. - Begin drafting tACT #2. |
| 3 | 1.2 Principles of Cartography | <ul style="list-style-type: none"> - Watch videos, read textbook pages, and review slides. - Continue drafting tACT #2. |
| 3-4 | 1.3 The Map Design Process | <ul style="list-style-type: none"> - Watch videos, read textbook pages, and review slides. - Complete iACT #2 by 23:59, Mon, 2/4. - Complete tACT #2 by 23:59, Wed, 2/6. - Complete Lab #1, Getting Started with ArcGIS by 23:59, Fri, 2/8. |
| Module 2: Map Scale and Spatial Reference Systems | | |
| 4-5 | 2.1 Map Scale & Generalization | <ul style="list-style-type: none"> - Watch videos, read textbook pages, and review slides. - Begin drafting tACT #3. - Complete Lab #2, Map Scale and Generalization by 23:59, Fri, 2/15. |
| 5 | 2.2 Coordinate Systems | <ul style="list-style-type: none"> - Watch videos, read textbook pages, and review slides. - Continue drafting tACT #3. |
| 5-6 | 2.3 Map Projections | <ul style="list-style-type: none"> - Watch videos, read textbook pages, and review slides. - Complete iACT #3 by 23:59, Mon, 2/18. - Complete tACT #3 by 23:59, Wed, 2/20. - Complete Lab #3, Coordinate Systems and Map Projections by 23:59, Fri, 2/22. |
| 6 | 2.4 Cartography Review Games | <ul style="list-style-type: none"> - Review concepts and methods covered thus far. - Participate in Cartography Review Games #1 - Complete Peer Evaluation #1 by 23:59, Fri, 2/22. |
| 6 | 2.5 Exam #1 | <ul style="list-style-type: none"> - Complete Exam #1 by 23:59, Fri, 2/22. |
| Module 3: Nature and Representation of Geographic Data | | |
| 6-7 | 3.1 Nature of Geographic Data | <ul style="list-style-type: none"> - Watch videos, read textbook pages, and review slides. - Begin drafting tACT #4. |
| 7 | 3.2 Thematic Map Symbols | <ul style="list-style-type: none"> - Watch videos, read textbook pages, and review slides. - Continue drafting tACT #4. - Complete Lab #4, Acquisition and Preprocessing of Geographic Data by 23:59, Fri, 3/1. |

| Week | Topic | Activity |
|------|--|--|
| 7-8 | 3.3 Principles of Typography and Color | <ul style="list-style-type: none"> - Watch videos, read textbook pages, and review slides. - Complete iACT #4 by 23:59, Mon, 3/4. - Complete tACT #4 by 23:59, Wed, 3/6. - Complete Lab #5, Color and Typography in Map Design by 23:59, Fri, 3/8. |
| 8 | 3.4 Descriptive Statistics | <ul style="list-style-type: none"> - Watch videos, read textbook pages, and review slides. - Begin drafting tACT #5. |
| 8-9 | 3.5 Data Classification | <ul style="list-style-type: none"> - Watch videos, read textbook pages, and review slides. - Complete iACT #5 by 23:59, Mon, 3/11. - Complete tACT #5 by 23:59, Wed, 3/13. - Complete Lab #6, Generation and Symbolization of Geographic Data by 23:59, Fri, 3/15. |
| 9 | 3.6 Cartography Review Games | <ul style="list-style-type: none"> - Review concepts and methods covered thus far. - Participate in Cartography Review Games #2 |
| 9 | 3.7 Exam #2 | <ul style="list-style-type: none"> - Complete Exam #2 by 23:59, Fri, 3/15. |

Module 4: Quantitative Thematic Map Types

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| 9-10 | 4.1.a Choropleth Maps | <ul style="list-style-type: none"> - Watch videos, read textbook pages, and review slides. - Begin drafting tACT #6 - Complete Lab #7, Choropleth Maps by 23:59, Fri, 3/22. |
| 10 | 4.1.b Dot Density Maps | <ul style="list-style-type: none"> - Watch videos, read textbook pages, and review slides. - Continue drafting tACT #6. |
| 11 | Spring Break | March 25-29 |
| 10-12 | 4.1.c Proportional Symbol Maps | <ul style="list-style-type: none"> - Watch videos, read textbook pages, and review slides. - Complete iACT #6 by 23:59, Mon, 4/1. - Complete tACT #6 by 23:59, Wed, 4/3. - Complete Lab #8, Dot Density and Proportional Symbol Maps by 23:59, Fri, 4/5. |
| 12-13 | 4.1.d Isarithmic and Surface Maps | <ul style="list-style-type: none"> - Watch videos, read textbook pages, and review slides. - Begin drafting tACT #7. - Complete Lab #9, Isarithmic and Surface Maps by 23:59, Fri, 4/12. |
| 12-13 | 4.1.e Cartograms | <ul style="list-style-type: none"> - Watch videos, read textbook pages, and review slides. - Continue drafting tACT #7. |
| 12-14 | 4.1.f Flow Maps | <ul style="list-style-type: none"> - Watch videos, read textbook pages, and review slides. - Complete iACT #7 by 23:59, Mon, 4/8. - Complete tACT #7 by 23:59, Wed, 4/10. - Complete Lab #10, Cartograms and Flow Maps by |

| Week | Topic | Activity |
|---|---|---|
| | | 23:59, Fri, 4/19. |
| 13 | 4.2 Cartography Review Games | <ul style="list-style-type: none"> - Review concepts and methods covered thus far. - Participate in Cartography Review Games #3 - Complete Peer Evaluation #2 by 23:59, Fri, 4/12. |
| 13 | 4.3 Exam #2 | <ul style="list-style-type: none"> - Complete Exam #3 by 23:59, Fri, 4/12. |
| Module 5: Map Creation, Evaluation, and Publishing | | |
| 14-15 | 5.1 Analog and Digital Cartography | <ul style="list-style-type: none"> - Watch videos, read textbook pages, and review slides. - Begin drafting tACT #8. |
| 15 | 5.2 Map Creation and Evaluation | <ul style="list-style-type: none"> - Complete iACT #8 by 23:59, Mon, 4/15. - Complete tACT #8 by 23:59, Wed, 4/17. - Complete Lab #11, Make Your Own Map #1 by 23:59, Fri, 4/26. |
| 15-17 | 5.2 Map Creation and Evaluation Continued | <ul style="list-style-type: none"> - Complete iACT # 9 by 23:59, Mon, 4/22. - Complete tACT #9 by 23:59, Wed, 4/24. - Complete iACT #10 by 23:59, Mon, 4/29. - Complete tACT #10 by 23:59, Wed, 5/1. - Complete Lab #12, Make Your Own Map #2 by 23:59, Fri, 5/3. |
| 17 | 5.3 Map Competition and Awards | <ul style="list-style-type: none"> - Complete Final Exam by 12:00, Thu, 5/9. - Rank final exam maps by 12:00, Fri, 5/10. - Celebrate competition winners, 12:00-13:00, Fri, 5/10. - Complete Peer Evaluation #3 by 23:59, Fri, 5/10. - Complete Course Evaluation by 23:59, Fri, 5/10. |