



Geography (GEOG) 462: Digital Cartography (3 Credit Hours)



Spring 2019

Instructor: Aaron E. Maxwell, PhD, GISP

Class Time: TTH 2:30-3:50 PM

Class Location: Brooks Hall 419

Office: Brooks Hall 141

Hours: MW 12:30-2:20 PM

Phone: (304) 293-2026

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Professor Maxwell's Website:

<http://maxwellae.wix.com/maxwell-geospatial>.

Course Contributors:

Several people helped me develop this course by providing advice, data, or lab exercises. Specifically, I would like to acknowledge the contributions of Dr. Greg Elms.

Course Rationale:

Cartography is the knowledge associated with the art, science, and technology of maps. Maps represent and communicate about our worlds and landscapes: real, perceived and imagined; global and local; earthbound, or of other worlds and created spaces. Maps portray spatial relationships among selected phenomena of interest and increasingly are used for analysis and synthesis. Through digital cartography and web mapping, however, it is possible for almost anyone to produce a bad map in minutes. Although cartography has undergone a radical transformation through the introduction of digital technology, fundamental principles remain. Doing computer cartography well requires a broad understanding of graphicacy as a language (as well as numeracy and literacy). **This course provides an introduction to the principles, concepts, software, and hardware necessary to produce good maps, especially in the context (and limitations) of geographic information systems (GIS) and the web.**

Course Outcomes:

After completing this course the student will:

1. be able to produce audience-appropriate maps using GIS data and software.
2. have gained an understanding of the purpose of cartography, recognize the elements of cartography representation, and how maps work.
3. be able to appropriately symbolize and classify geographic data.
4. have gained an introductory understanding of the use of graphics editing software for improving the quality of maps.

Course Structure/Philosophy

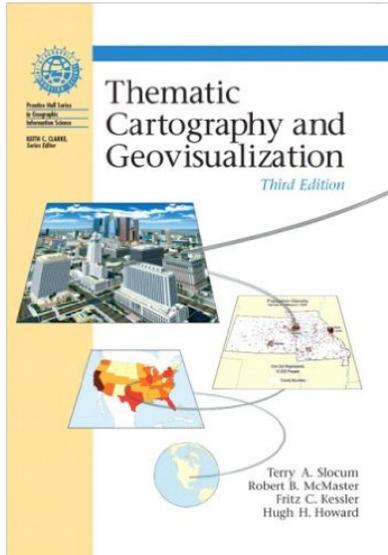
The course outcomes for this class will be met using a combination of lectures, class discussions, demonstrations, and projects. I firmly believe that students learn via engagement and by doing. As a result, this will not be a purely lecture-based course. Large portions of the class time will be set aside for class

discussion and cartographic projects. **It is important that you engage yourself during this class.** I will do my best to help you learn; however, it is imperative that you take ownership of your own education.

Textbook:

Recommended Text

Thematic Cartography and Geovisualization by Slocum et al. (ISBN-10: 0132298341; ISBN-13: 978-0132298346)

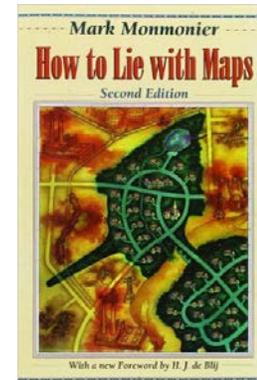
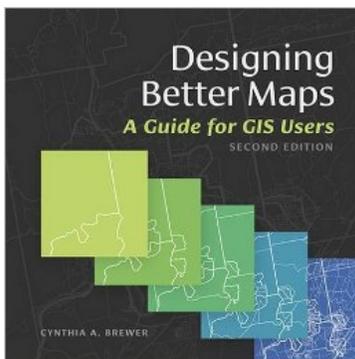


Other Valuable Texts

Designing Better Maps: A Guide for GIS Users 2nd Edition by Cynthia Brewer (ISBN-10: 1589484401; ISBN-13: 978-1589484405)

Some Truth with Maps: A Primer on Symbolization and Design by MacEachren (ISBN-10: 0892912146; ISBN-13: 978-0892912148)

How to Lie with Maps by Monmonier and Blij (ISBN-10: 0226534219; ISBN-13: 978-0226534213)



Grading:

Grading for this course will consist of 12 cartography projects and two exams.

A total of 12 cartography projects will be assigned throughout the semester. It is important that all projects be completed in a timely manner. Some bonus exercises may be provided. **Projects that are not turned in by the due date can be turned in up to 2 days late with a 20% penalty. Projects will not be accepted after this 2-day period.** The following projects will be assigned:

- Project 1: Projections/Grids
- Project 2: Base Map Design/Terrain Map
- Project 3: Map Series/GeoPDF
- Project 4: Using Adobe Illustrator Part 1
- Project 5: Using Adobe Illustrator Part 2
- Project 6: Typology and Labeling
- Project 7: Choropleth Mapping Part 1
- Project 8: Choropleth Mapping Part 2
- Project 9: Proportional and Gradational Symbol Maps
- Project 10: Dot Density Maps/Isarithmic Maps
- Project 11: Flow Map/Multivariate Map
- Project 12: Prism Map/Video Fly-Through

Exams will be a mix of true-or-false, multiple choice, short answer, and essay. They will focus on the key concepts and methods discussed in the lecture. The goal of the exams will be for you to demonstrate an understanding of the key concepts discussed in class. Being able to execute an analysis is of little benefit if you do not understand the underlying concepts. The exams are not cumulative. **Consistent with WVU guidelines, if you cannot take a regularly scheduled exam because of authorized University activities, you will have the opportunity to take a make-up exam at an alternate time. Make-up exams for absences due to any other reason will be at the discretion of the instructor. You must notify me beforehand if you need to miss an exam. I will not let you make up an exam without prior notification.**

Grade Point Distribution:

| | |
|--------------|----------------------------------|
| Projects | 50 Points Each, 600 Points Total |
| Midterm Exam | 100 Points |
| Final Exam | 100 Points |
| Total | 800 Points |

Grade Scale:

| | | |
|----------|---|-------------|
| 90%-100% | A | >720 Points |
| 80%-90% | B | >640 Points |
| 70%-80% | C | >560 Points |
| 60%-70% | D | >480 Points |
| 0%-60% | F | <480 Points |

Late Assignments:

Projects that are not turned in by the due date can be turned in up to 2 days late with a 20% penalty. Projects will not be accepted after this 2-day period.

Consistent with WVU guidelines, if you cannot take a regularly scheduled exam because of authorized University activities, you will have the opportunity to take a make-up exam at an alternate time. Make-up exams for absences due to any other reason will be at the discretion of the instructor. You must notify me beforehand if you need to miss an exam. I will not let you make up an exam without prior notification.

Cellphone, Tablets, and Computers:

Cell phone use of any kind will not be tolerated. I reserve the right to take your phone or remove you from the class permanently. If you are removed from the class, you will receive a zero in the course.

If I see your phone out during an assessment, I will assume you are cheating and you will receive a zero on the assessment.

Disruption:

Talking over the instructor or other students will not be tolerated. I reserve the right to remove you from the class permanently. If you are removed from the class, you will receive a zero in the course.

Tardiness:

Class will begin promptly, so please show up on time. If you are more than 10 minutes late for an exam or final, it will not be completed and you will receive a grade of zero on the examination.

Attendance Policy:

At West Virginia University, class attendance contributes significantly to academic success. Students who attend classes regularly tend to earn higher grades and have higher passing rates in courses. Excessive absences may jeopardize students' grades or even their ability to continue in their courses. There is a strong correlation between regular class attendance and academic success. Faculty are strongly encouraged to require attendance in all 100-level classes.

<http://catalog.wvu.edu/undergraduate/enrollmentandregistration/#enrollmenttext>

Final Time:

Final times cannot be rescheduled. You are expected to take the final at the time specified.

Feedback Response Time

I generally reply to email and discussion posts within 48 hours, except during holidays. Often I will reply much more quickly, but you should not count on a same-day reply. Please plan accordingly so that you don't miss deadlines! I generally return assignments within one week of when a discussion or assignment closes. If you would like to get help on an assignment ahead of the deadline, please email me! I'm happy to give preliminary feedback or answer questions.

Academic Integrity:

The integrity of the classes offered by any academic institution solidifies the foundation of its mission and cannot be sacrificed to expediency, ignorance, or blatant fraud. Therefore, I will enforce rigorous standards of academic integrity in all aspects and assignments of this course. For the detailed policy of West Virginia University regarding the definitions of acts considered to fall under academic dishonesty and possible ensuing sanctions, please see the West Virginia University Academic Catalog at <http://catalog.wvu.edu/undergraduate/coursecreditstermsclassification/#academicintegritytext>. Should you have any questions about possibly improper research citations or references, or any other activity that may be interpreted as an attempt at academic dishonesty, please see me before the assignment is due to discuss the matter.

Cheating will result in a zero on the assignment.

If I see your phone out during an assessment (e.g. tests or quizzes), I will assume you are cheating and you will receive a zero on the assessment.

Adverse Weather Commitment:

In the event of inclement or threatening weather, everyone should use his or her best judgment regarding travel to and from campus. Safety should be the main concern. If you cannot get to class because of adverse weather conditions, you should contact me as soon as possible. We can work something out.

Similarly, if I am unable to reach our class location, I will notify you of any cancellation or change as soon as possible (by 8:00 AM the morning of class or earlier), using MIX and eCampus to prevent you from embarking on any unnecessary travel. If you cannot get to class because of weather conditions, I will make allowances relative to required attendance policies, as well as any scheduled tests, quizzes, or other assessments.

Inclusivity Statement:

The West Virginia University community is committed to creating and fostering a positive learning and working environment based on open communication, mutual respect, and inclusion.

If you are a person with a disability and anticipate needing any type of accommodation in order to participate in this class, please advise me and make appropriate arrangements with the Office of Accessibility Services (293-6700). For more information on West Virginia University's Diversity, Equity, and Inclusion initiatives, please see <http://diversity.wvu.edu>.

Incomplete Grades

Students who want to be considered for an Incomplete must apply to their instructor prior to the end of the term. If the instructor agrees, the instructor and the student must negotiate the conditions under which the grade of I will be changed to a letter grade and sign a contract. The date to submit the incomplete work should not be set beyond the last day of class of the following semester. If the student does not complete the terms of contract then the instructor should submit a grade of F. All incomplete contracts must be filed with the department and Dean's Office. See the policy at:

<http://catalog.wvu.edu/undergraduate/enrollmentandregistration/#gradestext>

Sexual Misconduct Statement:

West Virginia University (WVU) does not tolerate sexual misconduct, including harassment, stalking, sexual assault, sexual exploitation, or relationship violence [BOG Policy 44]. It is important for you to know that there are resources available if you or someone you know needs assistance. You may speak to a member of university administration, faculty, or staff, but keep in mind that they have an obligation to report the incident to the Title IX Coordinator. If you want to speak to someone who is permitted to keep your disclosure confidential, please seek assistance from the Carruth Center, 304-293-9355 or 304-293-4431 (24-hour hotline), and locally within the community at the Rape and Domestic Violence Information Center (RDVIC), 304- 292-5100 or 304-292-4431 (24-hour hotline).

For students at WVU-Tech, contact the Women's Resource Center at 304-255-1585 (toll free at 1-888-825-7836) or REACH at 304-340-3676. For students at Potomac State, contact the PSC Psychological Services Office at 304-788-6976, and locally in Keyser, the Family Crisis Center, 304-788-6061 or 1-800-698-1240 (24-hour hotline).

For more information please consult WVU policies at <http://titleix.wvu.edu>.

Student Evaluation of Instruction

Effective teaching is a primary mission of West Virginia University. Student evaluation of instruction provides the university and the instructor with feedback about your experiences in the course for review and course improvement. Your participation in the evaluation of course instruction is both strongly encouraged and highly valued. Results are strictly confidential, anonymous, and not available to the instructor until after final grades are released by Admissions and Records. Information about how you can complete this evaluation will be provided later.

Sale of Course Material Statement:

All course materials, including lectures, class notes, quizzes, exams, handouts, presentations, and other materials provided to students for this course are protected intellectual property. As such, the unauthorized purchase or sale of these materials may result in disciplinary sanctions under the Campus Student Code.

Tips for Succeeding in this Course

1. Get help early on if you are having difficulties. Come to my office if you need to. If my office hours don't work for you, we can work something out.
2. Get to know others in the class. Help each other out.
3. I often set class time aside for review prior to an exam. Make the most of these review sessions.
4. If I give bonus opportunities, take advantage of them.
5. If I give study guides, take advantage of them.
6. If a book is required, get the book and use it.
7. Your goal should not be to pass; shoot for an A.
8. If I give a writing assignment, it will have a rubric attached. Use this rubric because this is what I'm looking for.
9. If I give a writing assignment, don't hesitate to get help.
10. Be open-minded. I understand that this class may not be within your subject of interest, but that doesn't mean you can't take interest. It's easier to learn something you have an interest in.

Note: This schedule is subject to change based on the needs and pacing of the class.

| Week | Tuesday | Thursday | Project Due Dates | Source Material |
|-----------------|--|---|---|--|
| Jan. 7-11 | Introductions, Syllabus, Software, Data | Projections, Scale, Generalization, and Grids | | Slocum et al. Chapters 1, 6, 7, 8, 9 Brewer Chapters 1, 3 |
| Jan. 14-18 | Project 1: Projection/Grids | Base Maps and Reference Maps | | Brewer Chapter 2 Slocum et al. Chapter 20 |
| Jan. 21-25 | Base Maps and Reference Maps | Project 2: Base Map Design/Terrain Map | Project 1 due by beginning of class time on Thursday | Brewer Chapter 2 Slocum et al. Chapter 20 |
| Jan. 28-Feb. 1 | Map Series/GeoPDF | Project 3: Map Series/GeoPDF | Project 2 due by beginning of class time on Thursday | Slocum et al. Chapter 13 Brewer Chapter 3 |
| Feb. 4-8 | Adobe Illustrator | Adobe Illustrator | Project 3 due by beginning of class time on Thursday | |
| Feb. 11-15 | Project 4: Adobe Illustrator Part 1 | Project 5: Adobe Illustrator Part 2 | | |
| Feb. 18-22 | Project 5: Adobe Illustrator Part 2 | Typology and Labelling | Project 4 due by beginning of class time on Thursday | Slocum et al. Chapter 11 Brewer Chapters 5, 6 |
| Feb. 25-March 1 | Typology and Labelling | Project 6: Typology and Labelling | Project 5 due by beginning of class time on Thursday | Slocum et al. Chapter 11 Brewer Chapters 5, 6 |
| March 4-8 | Project 6: Typology and Labelling | Midterm Exam | | Slocum et al. Chapter 11 Brewer Chapters 5, 6 |
| March 11-15 | Spring Recess | | | |
| March 18-22 | Color and Choropleth Mapping | Color and Choropleth Mapping | Project 6 due by beginning of class time on Thursday | Slocum et al. Chapters 4, 10, 14, 15 Brewer Chapters 7, 8 |
| March 25-29 | Prof. Maxwell Out-of-Town Project 7: Choropleth Mapping Part 1 | Prof. Maxwell Out-of-Town Project 8: Choropleth Mapping Part 2 | | Slocum et al. Chapters 4, 10, 14, 15 Brewer Chapters 7, 8 |
| April 1-5 | Symbology | Symbology | Project 7 due by beginning of class time on Thursday | Slocum et al. Chapters 5, 15, 16, 17, 19 Brewer Chapter 9 |
| April 8-12 | Project 9: Proportional and Gradational Symbol Maps | Project 10: Dot Density Maps/Isarithmic Maps | Project 8 due by beginning of class time on Thursday | Slocum et al. Chapters 5, 15, 16, 17, 19 Brewer Chapter 9 |
| April 15-19 | Multivariate Maps, Flow Maps, Prism Maps, 3D Maps | Final Exam | Project 9 due by beginning of class time on Thursday | Slocum et al. Chapters 18, 19 Brewer Chapters 8, 9 |
| April 22-26 | Project 11: Flow Map/Multivariate Map | Project 12: Prism Map/Video Fly-Through | Project 10 due by beginning of class time on Thursday | Slocum et al. Chapters 18, 19 Brewer Chapters 8, 9 |
| April 29-May 3 | Projects 11 and 12 are due by the end of the scheduled final time: Friday May 3 rd by 10 AM | | | |

| | Monday | Tuesday | Wednesday | Thursday | Friday |
|-------------|---------------|--------------|---------------|--------------|---------------|
| 8:30-9:00 | | | | | |
| 9:00-9:30 | | | | | |
| 9:30-10:00 | | | | | |
| 10:00-10:30 | | | | | |
| 10:30-11:00 | | | | | |
| 11:00-11:30 | | | | | |
| 11:30-12:00 | | | | | |
| 12:00-12:30 | | | | | |
| 12:30-1:00 | Office Hours | | Office Hours | | |
| 1:00-1:30 | Office Hours | RS App | Office Hours | RS App | |
| 1:30-2:00 | Office Hours | RS App | Office Hours | RS App | |
| 2:00-2:30 | Office Hours | RS App | Office Hours | RS App | |
| 2:30-3:00 | Digital Earth | Digital Cart | Digital Earth | Digital Cart | Digital Earth |
| 3:00-3:30 | Digital Earth | Digital Cart | Digital Earth | Digital Cart | Digital Earth |
| 3:30-4:00 | GIScience | Digital Cart | GIScience | Digital Cart | |
| 4:00-4:30 | GIScience | | GIScience | | |
| 4:30-5:00 | GIScience | | GIScience | | |
| 5:00-5:30 | | | | | |
| 5:30-6:00 | | | | | |

Important Academic Dates

Thursday, January 3: New Student Orientation

Friday, January 4: General Registration

Monday, January 7: On Campus First Day of Classes

Friday, January 11: Last Day to Register, Add New Courses, Make Section Changes, Change Pass/Fail and Audit

Monday, January 21: Martin Luther King Jr. Day Recess: University Closed

Friday, March 1 by noon: Mid-Semester Grades Due

Saturday, March 9 through Sunday, March 17: Spring Recess

Friday, March 22: Last Day to Drop a Class

Friday, April 19: Spring Holiday: University Closed

Thursday, April 25: Last Day to Withdraw from the University

Friday, April 26: Last Day of Classes

Monday, April 29 through Friday, May 3: Final Exam Week

Saturday, May 4: Summer Recess Begins

Friday, Saturday, and Sunday, May 10, May 11, and May 12: Commencement