

March 2, 2020



**George Mason University
Department of Geography and Geoinformation Sciences
GGIS 311: Introduction to Geographic Information Systems – Spring 2020**

Class time: Tuesdays and Thursdays from 3:00 pm – 4:15 pm

Location: Exploratory Hall, Room 2103

Instructor: Lori Mandable
Exploratory Hall, Room 3417
Imandabl@gmu.edu
703-966-5316

Learning Assistant: Emma Von Hoene
Exploratory Hall, Room 2102 (GGIS Lab)
evonhoen@gmu.edu

Office hours: Lori: Mondays 12pm-1:15pm, Tuesdays 12pm-2:45pm, Wednesdays 12pm-1:15pm, Thursdays 12pm-2:45pm and by appointment in 3417 Exploratory Hall

Emma: Tuesdays 12pm-3pm and Thursdays 12pm-3pm in 2102 Exploratory Hall

Overview: GGIS 311 is an introduction to geographical information systems and is designated as a Mason Impact course. Mason Impact courses are part of a Provost initiative “that prepares students to tackle significant global questions and challenges by investigating meaningful questions, engaging multiple perspectives and creating new knowledge within the context of Undergraduate Research, Civic Engagement, Entrepreneurship and Global Activities

Topics covered include basic data structures, data sources, data collection, data quality, geodesy and map projections, spatial and tabular data analyses, digital elevation data and terrain analyses, cartographic modeling, and cartographic layout. Laboratory exercises provide practical experiences that complement the theory covered in textbook and lecture. While this course is not specifically a software course, you must show proficiency with the software to pass the class.

Learning Objectives:

1. Understand knowledge creation: Students will understand how knowledge is generated and communicated, and how it can be used to address questions or problems in disciplines and in society.
 2. Engage multiple perspectives: Students will be able to identify and negotiate multiple perspectives, work collaboratively within and across multiple social and environmental contexts, and engage ethically with their subject and with others.
 3. Investigate a meaningful question: Students will use inquiry skills to articulate a question; engage in an inquiry process; and situate the concepts, practices, or results within a broader context.
- Students will be able to ask increasingly complex questions about significant problems, debates, or challenges.
 - Students will be able to evaluate and choose inquiry methods that are appropriate to a project.
 - Students will be able to explain how a project has value to local, civic, professional, scholarly, or global contexts.

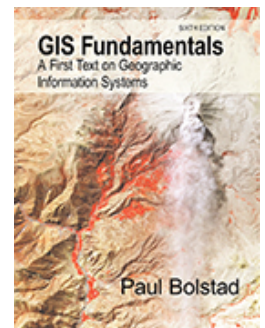
Required Text: *GIS Fundamentals: A First Text on Geographic Information Systems, 6th Ed.*, Bolstad, Paul. Eider Press 2019.

ISBN: 978-1-50669-587-7

Textbook website: <http://www.paulbolstad.net/gisbook.html>

Also available via Amazon in print form or via XanEdu in digital or print form

You should do the readings before each Tuesday class period. It will be much more beneficial to you for lecture, and especially for labs on Thursdays.



Required Materials: USB Drive -2GB or larger of free space.

Lab instructions and data will be provided on the course Blackboard site.

Grading: Grades for this course are based on individual performance versus a consistent standard. There is no curve – so if everyone earns an ‘A’, everyone will receive an ‘A’. Grades will be based upon performance in the following areas:

Lab exercises:	220 points (20 points each)
Quizzes:	50 points (10 points each)
Exam 1:	45 points
Exam 2:	45 points
<u>Final Exam:</u>	<u>80 points</u>
Total:	440 points

Grades will be determined according to the following schema:

Grade	Percentage	Points
A+, GPA 4.00 points earned	97% and above	426.8 - 440
A, GPA 4.00 points earned	94% - 96.99%	413.6 – 426.79
A-, GPA 3.67 points earned	90% - 93.99%	396 – 413.59
B+, GPA 3.33 points earned	87% - 89.99%	382.8 – 395.99
B, GPA 3.00 points earned	84% - 86.99%	369.6 – 382.79
B-, GPA 2.67 points earned	80% - 83.99%	352 – 369.59
C+, GPA 2.33 points earned	77% - 79.99%	338.8 – 351.99
C, GPA 2.00 points earned	74% - 76.99%	325.6 – 338.79
C-, GPA 1.67 points earned	70% - 73.99%	308 – 325.59
D, GPA 1.00 points earned	60% - 69.99%	264 – 307.99
F, GPA 0.00 points earned	59.99% and below	0 - 263.99

Lab Exercises: There will be 13 assigned labs over the course of the semester, with 11 of those 13 labs counting for the lab portion of your grade. Each lab is worth 20 points, and I will drop the 2 lowest lab grades from labs 1-12 in computing the score for a total of 220 points. The only exception to this is that Lab 13 is MANDATORY and CANNOT be dropped. It is the final, comprehensive lab of the semester requiring you to utilize all the skills you have developed over the course of the semester in ArcGIS.

Lab exercises will be available on Blackboard. I recommend downloading and printing the exercises prior to beginning your work. You may complete the exercises in labs or at home. You should read the lab in advance, and review/note new procedures or activities. Labs will require more than the one-hour class period to complete. One tip: Save the labs along the way – they make excellent references when doing more complex labs during the semester.

The GGS computer lab in Exploratory Hall 2102 has registered copies of ArcGIS 10, which are accessible 24/7 via your GMU ID. Students registered for this class automatically receive permission to utilize this lab. Registered students will also receive a one-year copy of ArcGIS for use at home. We offer this software as a convenience, but do not provide tech support. For that you must contact ESRI Support at 1-888-377-4575. Labs must be submitted via Blackboard using the ArcGIS product.

All labs assignments are to be submitted via Blackboard. Submit by clicking on the appropriate assignment link to open the answer submission window. Written answers may be typed in, and attachments may be added there. Click “Submit” when complete. You may submit answers as many times as you would like up to the time due, though only the final submission will be graded.

Lab due dates are listed on the syllabus and students have until 11:59pm of that date to submit their labs. **Late labs are docked by 10% per day, and labs won't be accepted if they are more than 5 days late.** Makeup labs will not be given, so please anticipate conflicts and contact the instructor in the event of an absence. Labs are only accepted

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through the Blackboard course site - **NOT Email!** Labs are submitted as *.jpg, MS Word, typed text, or *.pdf. **Please do not send *.mdx or shapefiles.**

Quizzes: Quizzes on course topics will be given at random and can best be prepared for by answering the questions at the back of each chapter.

Exams: There will be three exams for this course. Exams 1 and 2 will cover current sections of the course, while the Final Exam will be comprehensive.

General Information and Policies

1. **Attendance is key to doing well in this course.** Several scientific studies conclusively correlate academic success with regular class attendance. While the instructor does not take attendance for class, there will be 5 unannounced quizzes given in class during the semester, which comprise 50 points of the total grade for this class. If you must miss a class, please let the instructor know ahead of time via email or text message. It is the student's responsibility to meet with the instructor to follow up on any missed material.
2. Make up exams, in class quizzes and late submissions of post-reading quizzes, assignments and other graded material will only be accepted at the discretion of the instructor for **DOCUMENTED** extenuating circumstances. Missed quizzes, exams and late submissions of post-reading quizzes and assignments will receive a grade of 0 and it is the student's responsibility to follow up with the instructor regarding a documented extenuating circumstance.
3. Use of electronic devices: Please be respectful of your peers and your instructor and do not engage in activities that are unrelated to the class. Such disruptions show a lack of professionalism and you may be asked to leave the classroom.
4. Cell phones: As a courtesy to your classmates, professor and guest speakers, please turn your cell phone off during class lectures. If you are experiencing a medical or family situation where you need to receive an incoming call, please let me know, mute the ring on your phone, and feel free to exit the class to receive your call.
5. *Students must use their MasonLive email account to receive important University information, including communications related to this class. The instructor will not respond to messages sent from or send messages to a non-Mason email address.* See <http://masonlive.gmu.edu> for more information.
6. The instructor will return emails and text messages as quickly as possible Monday through Friday. If you send an email on Saturday or Sunday it could be a full 24-48 hours before the instructor is able to respond.
7. University Policies: The University Catalog, <http://catalog.gmu.edu>, is the central resource for university policies affecting student, faculty, and staff conduct in university academic affairs. Other policies are available at <http://universitypolicy.gmu.edu/>. All members of the university community are responsible for knowing and following established policies
8. Inclement Weather and Class Cancellation: GMU posts closings on its website (www.gmu.edu.) You can receive notification from Mason Alerts via email or text to a cell phone; please let the instructor know if you need more information.

9. Students of this course must be familiar with the GMU honor code, which can be viewed via this link: <http://www.gmu.edu/catalog/9798/honorcod.html#code>. *Three fundamental and rather simple principles to follow at all times are that: (1) all work submitted be your own; (2) when using the work or ideas of others, including fellow students, give full credit through accurate citations; and (3) if you are uncertain about the ground rules on a particular assignment, ask the instructor for clarification. No grade is important enough to justify academic misconduct. Plagiarism means using the exact words, opinions, or factual information from another person without giving the person credit. Writers give credit through accepted documentation styles, such as parenthetical citation, footnotes, or endnotes. Paraphrased material must also be cited, using MLA or APA format. A simple listing of books or articles is not sufficient. Plagiarism is the equivalent of intellectual robbery and cannot be tolerated in the academic setting. If you have any doubts about what constitutes plagiarism, please see the instructor. Any violations of the honor code are taken very seriously and will be reported.*
- Please note you may work together on labs, but **you each must do every part of each lab and turn in your own work for the entire portion of each assignment/lab**. That means each of you should perform every step indicated in the lab instructions. Your grade is for individual effort. Copied files/maps from other students will be construed as cheating, with all parties involved receiving ZERO points for that assignment. Additionally, copied files/maps will be reported to the Honor Committee and the Office of Academic Integrity in accordance with university policy. Pursuant to OAI policy, for any cases of cheating faculty must give two recommendations for sanctions, for first and second offenses. My recommendations will be as follows:
- 1st Offense: 'F' for the course and academic probation
 - 2nd Offense: Expulsion from the university
10. Occasional discussions may occur in class. Please be kind and respectful to fellow students. Remember your audience and use proper professional etiquette and language. Review the George Mason Diversity Statement below:
- George Mason University promotes a living and learning environment for outstanding growth and productivity among its students, faculty and staff. Through its curriculum, programs, policies, procedures, services and resources, Mason strives to maintain a quality environment for work, study and personal growth.*
- An emphasis upon diversity and inclusion throughout the campus community is essential to achieve these goals. Diversity is broadly defined to include such characteristics as, but not limited to, race, ethnicity, gender, religion, age, disability, and sexual orientation. Diversity also entails different viewpoints, philosophies, and perspectives. Attention to these aspects of diversity will help promote a culture of inclusion and belonging, and an environment where diverse opinions, backgrounds and practices have the opportunity to be voiced, heard and respected.*
- The reflection of Mason's commitment to diversity and inclusion goes beyond policies and procedures to focus on behavior at the individual, group and organizational level. The implementation of this commitment to diversity and inclusion is found in all settings, including individual work units and groups, student organizations and groups, and classroom settings; it is also found with the delivery of services and activities, including, but not limited to, curriculum, teaching, events, advising, research, service, and community outreach.*
- Acknowledging that the attainment of diversity and inclusion are dynamic and continuous processes, and that the larger societal setting has an evolving socio-cultural understanding of diversity and inclusion, Mason seeks to continuously improve its environment. To this end, the University promotes continuous monitoring and self-*

assessment regarding diversity. The aim is to incorporate diversity and inclusion within the philosophies and actions of the individual, group and organization, and to make improvements as needed.

11. If you have a documented learning disability or other condition that may affect academic performance: 1) Inform the professor; and 2) Consult with the Office of Disability Services (SUB I, Rm. 2500; 703-993-2474; <http://ods.gmu.edu>) so that they can document the issues and determine about proper accommodations. As a matter of university policy, faculty cannot provide accommodations without documentation from the ODS. *Disability Services at George Mason University is committed to providing equitable access to learning opportunities for all students by upholding the laws that ensure equal treatment of people with disabilities. If you are seeking accommodations for this class, please first visit <http://ds.gmu.edu/> for detailed information about the Disability Services registration process. Then please discuss your approved accommodations with the instructor. Disability Services is located in Student Union Building I (SUB I), Suite 2500. Email:ods@gmu.edu | Phone: (703) 993-2474*
12. *As a faculty member and designated "Responsible Employee," the instructor is required to report all disclosures of sexual assault, interpersonal violence, and stalking to Mason's [Title IX Coordinator](#) per [university policy 1412](#). If you wish to speak with someone confidentially, please contact the [Student Support and Advocacy Center](#) (703-380-1434) or [Counseling and Psychological Services](#) (703-993-2380). You may also seek assistance from [Mason's Title IX Coordinator](#) (703-993-8730; titleix@gmu.edu).*
13. George Mason University offers several student support resources on campus. The following link provides information regarding each of these resources and links to their pages for further information: <https://stearnscenter.gmu.edu/knowledge-center/knowning-mason-students/student-support-resources-on-campus/> and is listed on the following page.
14. Failing to complete work or interact with the instructor **will not** result in automatically being dropped or withdrawn from the class. Students are responsible for any changes in enrollment. The grade earned will be reported at the end of the semester for all students enrolled at that time.

Student Support Services:

Assistive Technology Initiative (ATI)

Aquia Building, Room 238 | ati.gmu.edu | ati@gmu.edu | 703-993-4329

Assistive technology assessments, training, and support services for individuals with disabilities.

University Career Services

Student Union Building 1 (SUB I), 3400 | careers.gmu.edu/ | careers@gmu.edu | 703-993- 2370

A centralized career center that takes an industry-focused approach to serving our students and employers.

Counseling and Psychological Services (CAPS)

Student Union Building 1 (SUB I), Room 3129 | caps.gmu.edu/ | 703-993-2380

Individual and group counseling, workshops, and community education programs designed to enhance students' personal experience and academic performance.

Disability Services (DS)

Student Union Building 1 (SUB I), 2500 | ds.gmu.edu | ods@gmu.edu 703.993.2474

Promotes equal access for students with disabilities, fosters partnerships, and empower students.

Office of Diversity, Inclusion and Multicultural Education (ODIME)

Student Union Building 1 (SUB I), 2400 | odime.gmu.edu | 703.993.2700

Leads Mason in creating and sustaining inclusive learning environments where all members of the Mason community are welcomed, valued, and supported.

Learning Services

Student Union Building 1 (SUB I), 3129 | learningservices.gmu.edu | 703-993-2999

Experience-based learning opportunities through which students explore a wide range of academic concerns.

Lesbian, Gay, Bisexual, Transgender, Queer and Questioning Resources (LGBTQ)

Student Union Building 1 (SUB I), Room 2200 | lgbtq.gmu.edu/ | 703.993.2702

Promotes the academic success, health and well-being of lesbian, gay, bisexual, transgender, queer, and questioning (LGBTQ) students and their allies.

Office of Military Services

Student Union Building 1 (SUB I), 1510 | admissions.gmu.edu/military/ | 703.993.1316

Assists veterans, active duty service members, guardsmen, reservists, and dependents in making a successful transition into the Mason community.

Office of International Programs and Services (OIPS)

Student Union Building 1 (SUB I), 4300 | oips.gmu.edu | 703.993.2970

Educates, celebrates, and serves Mason community, including international and domestic students, faculty and exchange visitors, by helping them reach their highest academic and personal goals.

Student Health Services

Student Union Building 1 (SUB I), 2300 | shs.gmu.edu | 703.993.2831

Provides high quality health care, counseling, health education and prevention services to George Mason University students.

Student Support and Advocacy Center (SSAC)

Student Union Building 1 (SUB I), Room 3200 | ssac.gmu.edu | 703-993-3686

Offers educational programming, one-on-one consultations, and resources in the areas of interpersonal violence, personal wellness, and alcohol and drug use.

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Course Schedule:

Week	Tuesday	Thursday	Lab Due
Week 1: Jan 21, 23	Course/Lab Introduction	Chapter 1: Intro to GIS	N/A
Week 2: Jan 28, 30	Chapter 2: Data Models	Lab 1: Introduction to ArcGIS	1: Feb 11
Week 3: Feb 4, 6	Chapter 3: Geodesy, Datums, Map Projections, and Coordinate Systems	Chapter 3: Geodesy, Datums, Map Projections & Coordinate Systems (cont'd) Lab 2: Projections	2: Feb 18
Week 4: Feb 11, 13	Chapter 4: Maps, Data Entry, Editing & Output	Lab 3: Digitizing	3: Feb 27
Week 5: Feb 18, 20	Chapter 4: Maps, Data Entry, Editing & Output (cont.)	Lab 4: Georeferencing	4: Mar 5
Week 6: Feb 25, 27	Exam 1 (Chp. 1-4)	Chapters 5-6: Global Satellite Navigation Systems and Aerial/Satellite Images	N/A
Week 7: Mar 3, 5	No Lecture – Emma available to help with Lab 4	Lab 5: Data Collection with GPS Units	5: Mar 19
Week 8: Mar 9-15	**** Spring Break ****		
Week 9: Mar 17, 19	Chapter 7: Digital Data Lab 6: Digital Data and Tables	Chapter 8: Attribute Data and Tables	6: Mar 26
Week 10: Mar 24, 26	Chapter 8: Attribute Data and Tables (cont.) Lab 7: Tables	Chapter 9: Basic Spatial Analysis	7: Apr 2
Week 11: Mar 31, Apr 2	Lab 8: Spatial Selection, etc.	Lab 9: Buffering and Overlay	8: Apr 9 9: Apr 14
Week 12: Apr 7, 9	Exam 2 (Chp. 7-9)	Chapter 10: Topics in Raster Analysis	N/A
Week 13: Apr 14, 16	Lab 10: Raster Analyses	Chapter 11: Terrain Analysis	10: Apr 23
Week 14: Apr 21, 23	Lab 11: Terrain Analyses	Chapter 12: Spatial Estimation Lab 12: Interpolation	11: Apr 30 12: May 6
Week 15: Apr 28, 30	Chapter 13: Spatial Models & Modeling Lab 13: Intro to Cartographic Modeling	Chapter 14: Data Standards & Data Quality Chapter 15: New Developments in GIS	13: May 7
Week 16: Thursday, May 7	Final Exam (1:30 pm -4:15 pm) (Comprehensive)		

***Notes:**

¹This is a flexible course outline. The instructor reserves the right to make changes when necessary.

²The current “official” copy of the syllabus/course outline will be kept on Blackboard. Students will be notified of any changes.