GGS 311 (001)
Introduction to Geographic Information Systems

Fall 2017
Tues/Thurs 3:00pm

INSTRUCTOR: Dr. Liz Mason-Deese
EMAIL: lmasonde@gmu.edu

OFFICE: Exploratory Hall 2413
HOURS: M 1-3pm, TH 1-2:30 pm
and by appointment

Teaching Assistant: Palak Matta pmatta@masonlive.gmu.edu

Required Text: *GIS Fundamentals: A First Textbook on Geographic Information Systems,* 4th or 5th editions, Bolstad, Paul V., Eider Press
Textbook website: http://www.paulbolstad.net/gisbook.html

Course Description: This course is designed as an introduction to geographic information systems and focuses on the associated fundamental scientific principles, theories, and techniques. Students will learn how the Earth's features are modeled and stored in a computer information system. Students will learn how to use geographic information systems to answer geographic questions and how to perform simple analytical procedures using geographic data. Students will formulate a research proposal around a scientific question, adopt appropriate GIS-based methodology, collect geographic data, conduct analysis, and prepare a summary and evaluation of findings.

Learning Outcomes:
By the end of this course, students will be able to:

1. Demonstrate a broad knowledge-base of the fundamental scientific theories, principals and techniques of Geographic Information Systems.
2. Demonstrate an understanding of the societal context of GIS, and articulate important historical events, contemporary developments, and future trends that shape GIS.
3. Apply and demonstrate key concepts of spatial analysis using commercial GIS software.
4. Given a specific problem, identify problem parameters, characterize data needs, assemble data, and perform analysis with GIS.
5. Effectively communicate results of research and analysis using maps and graphics produced with GIS, created according to best professional cartographic practices and aesthetic guidelines.

COURSE POLICIES & GRADING

Communication: I can be reached by email – lmasonde@gmu.edu – for any questions regarding the course. I will do my best to get back to you as soon as possible. I expect all emails to be written in a formal manner, complete with a salutation (e.g. "Dear Dr. Mason-Deese" or "Hi Prof. Mason-Deese"); followed by your message, written in complete sentences with proper grammar and capitalization; followed by your signature/name. Please reference the course number in your subject line.

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 assignments (9):	40%
Exams (2):	30%
Participation	10%
Final Project:	20%
Total:	100%

Grades will be determined according to the following scale:

		A	93-100	A–	90-92	(Outstanding)
B+	88-89	B	83-87	B–	80-82	(Commendable)
C+	78-79	C	73-77	C–	70-72	(Average)
D+	68-69	D	60-67			(Marginal)
F	59 and below					(Failure)

Labs Exercises: Lab exercises will be available on Blackboard in PDF format. 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. You should be able to complete the labs in the given class time but if not the lab in Exploratory Hall, Room 2102 is open 24 hours for you to use. Registered students may be able to 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 will typically be due the Sunday (11.59 p.m.) after the lab is assigned, unless otherwise noted. Late labs are docked by 10% per day, and labs won't be accepted if they are more than 5 days late. Make-up labs are possible if the instructor has advance notice, so please anticipate conflicts, and contact the instructor. Labs are only accepted 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.** Each lab is worth 5% of your total grade.

Participation: Class participation is made up of a) attending class on time and engaging in in-class activities and discussions of readings and ideas, and b) demonstrating a willingness to assist your fellow students during class, should they need help. If you have more than 3 unexcused absences, your final participation grade will be affected. Participation will count for 10% of your final grade.

Exams: There will be two exams for this course. Exam 1 will cover chapters 1-4 in the text and Exam 2 will cover chapters 7-10. Exams will consist of multiple choice and short answer questions. Make-up exams will not be given without prior arrangement with the instructor, documented illness, or university-approved excused absences. Each exam is worth 15% of your final grade.

Final Project: Students will work in pairs to complete a final course project, consisting of a research proposal, geographic data collection, GIS-based analysis, summary, and a presentation to the class. The course project will build on the underlying scientific knowledge gained in the course and the GIS skills acquired through the lab exercises. The final project will be worth 20% of your final grade. More information and rubrics for the project will be available on Blackboard.

Honor Code: The George Mason University Honor Code is in effect for this course. Please consult the university catalog for a complete statement of the Honor Code, and see the instructor if you need further clarification.

Please note you may work together on labs, but **you each must do every part of each lab**, and **turn in entirely your own work**. 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; and will be reported to the Honor Committee and the Office of Academic Integrity in accordance with university policy.

Special Needs: If you have a documented learning disability or other condition that may affect academic performance you should: **1**) make sure this documentation is on file with the Office of Disability Services (SUB I, Rm. 2500; 993-2474; http://ds.gmu.edu/) so that they can make a determination about the accommodations you need; and **2**) communicate with me to discuss your accommodation needs or have the Office of Disability Services do so. I can provide proper accommodations with documentation and professional advice from the Office of Disability Services.

COURSE SCHEDULE

*This Schedule is subject to change. Any changes will be announced over email & Blackboard.

Date	Topic	Exercises/Lab Assignments	Readings
T 8/29	Syllabus & Course Policies		
Th 8/31	Introduction to GIS		Bolstad Chapter 1
T 9/5	Data Models		Bolstad Chapter 2 (pp.25-52; 58-64)
Th 9/7		Lab 1 (Due 9/10)	
T 9/12	Projections & Coordinate Systems		Bolstad Chapter 3 (pp. 71-91; 101-123)
Th 9/14		Lab 2 (Due 9/17)	
T 9/19	Maps, Data Entry & Editing I		Chapter 4 (pp. 131-152)
Th 9/21		Lab 3 (Due 9/24)	
T 9/26	Maps, Data Entry & Editing II		Bolstad Chapter 4 (pp. 153-175)
Th 9/28		Lab 4 (Due 10/1)	

T 10/3	Digital data		Bolstad Chapter 7
Th 10/5		Lab 6 (Due 10/15)	***Project Proposal Due**
T 10/10	NO CLASS – Columbus Day		
TH 10/12	**EXAM 1 [Ch. 1-4]**		
T 10/17	Attributes Data & Tables		Bolstad Chapter 8
TH 10/19		Lab 7 (Due 10/21)	
T 10/24	Basic Spatial Analysis I		Bolstad Chapter 9 (pp. 347-376)
Th 10/26		Lab 8 (Due 10/29)	
T 10/31	Basic Spatial Analysis II		Chapter 9 (pp. 377-398)
Th 11/2		Lab 9 (Due 11/5)	
T 11/7	Raster Analysis		Chapter 10
Th 11/9		Lab 10 (Due 11/12)	
T 11/14	**EXAM 2 [Ch. 7-10]**		
Th 11/16	Map Design		***** Project Data Check**
T 11/21		Work on Projects	
T 11/28		Work on Projects	
Th 11/30		Work on Projects	
T 12/5		PRESENTATIONS	***** Final Projects Due**
Th 12/7		PRESENTATIONS	

STUDENT SERVICES AND UNIVERSITY RESOURCES

Writing Center
The George Mason University Writing Center staff provides a variety of resources and services (e.g., tutoring, workshops, writing guides, handbooks) intended to support students as they work to construct and share knowledge through writing. [See http://writingcenter.gmu.edu].

Counseling and Psychological Services
The George Mason University Counseling and Psychological Services (CAPS) staff consists of professional counseling and clinical psychologists, social workers, and counselors who offer a wide range of services (e.g., individual and group counseling, workshops and outreach programs) to enhance students' personal experience and academic performance [See http://caps.gmu.edu].

Family Educational Rights and Privacy Act (FERPA)
The Family Educational Rights and Privacy Act of 1974 (FERPA), also known as the "Buckley Amendment," is a federal law that gives protection to student educational records and provides students with certain rights. [See http://registrar.gmu.edu/ferpa/.]