

Meeting Time: Tuesdays and Thursdays 3:00 – 5:15 pm
Room: Exploratory Hall 2103
Credit Hours: 3

FACULTY CONTACT INFORMATION:

Name : Maction Komwa, PhD
Room : 2414 Exploratory Hall
Office Hours: MW – 10:30 am – Noon | Thursdays – 11:00 -Noon
Email : mkomwa@gmu.edu

Contact GIS Learning Assistant

GIS Learning Assistant: Emma Von Hoene (evonhoen@gmu.edu)
Office: GGS Cubicle Office Space or GIS Lab

Required Textbook:

Paul Bolstad. 2012. *GIS Fundamentals: A First on Geographic Information Systems*. 4th or 5th Edition, Eider Press, Minnesota.

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

Price, Maribeth, ©2019. *Mastering ArcGIS*. Eight Edition. New York: McGraw Hill.

Course description

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.

Course objectives

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

- a. Demonstrate a broad knowledge-base of the fundamental scientific theories, principals and techniques of Geographic Information System.
- b. Demonstrate an understanding of the societal context of GIS, and articulate important historical events, contemporary developments, and future trends that shape GIS.
- c. Apply and demonstrate key concepts of spatial analysis using commercial GIS software.
- d. Given a specific problem, identify problem parameters, characterize data needs, assemble data, and perform analysis with GIS.
- e. Effectively communicate results of research and analysis using maps and graphics produced with GIS software packages.

Activities

You will achieve these goals through attending the course lectures, reading the textbook, participating in class discussion, successfully completing lab exercises, quizzes and exams.

Exams:

There will be three exams [**Exam I; Mid-Term and Final**]. Questions will come from the concepts covered in class. Exams will consist of multiple choice, fill-in the blank and short answer questions. Make-up Exam will not be given without supporting documents or university approved excuse absences.

Lab Activities:

You will be requested to complete lab exercises and submitting lab reports. Lab sessions will be conducted prior to the assigned labs and it is your responsibility to attend to these lab sessions. The GIS Learning Assistant including myself will be present to guide you the process of these lab activities. We will use ArcGIS software installed in the classroom computers plus the GIS Lab. If you need ArcGIS for Student Use, please let us know. Data for all the Labs will be posted through the Blackboard in the Assignment Folder. 30% of your total grade will come from these Lab sessions so your presence to lab sessions is highly encouraged. Do not hesitate to ask your GIS Learning Assistant and your Instructor if you encounter a problem. Use our designated Office hours! They are free!

Labs are only accepted through the Blackboard course site – NOT through Emails! Labs are to be submitted as *.jpg, MS Word, typed text, or *.pdf. Please do not send, submit, or attach *.mdx or shapefiles.

Each student must bring a small USB flash drive with 1 Gig + of free space. All class exercise and data should be saved to this drive.

Final Project:

You will be divided in groups of two - three students each to work on a final project in which you will investigate a GIS application in depth based on the concepts and techniques learned in class. Project description, data source, time frame, and deliverables will be posted through the GMU Blackboard website in the Assignment Folder. The course project will build on the underlying scientific knowledge gained in the course and the GIS skills acquired through the lab exercises. At the end of the semester, your group will make a powerPoint presentation to demonstrate your understanding of the GIS concepts and skills learned in class.

Focus of instruction:

This course is divided into two important main parts: lectures, which will introduce the theory of geographic information systems (GIS), and lab assignments, which will help you to familiarize yourself with many aspects of the software. We will discuss the GIS concepts, data, tools, and GIS applications through case studies during our lectures. The laboratory sessions will introduce the geospatial data and software tools that you will require in order to finish your lab exercises. The practical component involves the use of ESRI's GIS modules, including ArcGIS Spatial Analyst. You will be provided instructions on how to use ArcGIS software during your lab sessions.

Assignments and Grading

The components of your assignments and grade are listed in the table below:

Assignments description	% (of final grade)
Lab Assignments <ul style="list-style-type: none"> You will do practical GIS exercises on the computers – For Lab instructions – check the <i>Blackboard >> Assignment Folder >> GIS Labs</i>. All labs require a significant amount of time besides the lab allocated time period. Therefore, in case you don't finish the labs during assigned time periods, you will complete your lab in the GIS Lab, which you will have access 24/7. You will use ArcGIS software and apply the course concepts to the real data. You should refer to the course schedule due dates posted through the Blackboard for specific due dates of each lab assignment. It is your responsibility to check the Blackboard from time to time to avoid missing a lab and points deduction. 	30%
Examination – <i>There will be three exams which will contain objective (multiple-choice), short-answer questions, & Fill-in the blank questions.</i> <p style="text-align: right;">Exam I _____></p> <p style="text-align: right;">Mid-Term Exam _____></p> <p style="text-align: right;">Final Exam _____></p>	<p style="text-align: right;">10%</p> <p style="text-align: right;">10%</p> <p style="text-align: right;">20%</p>
Final Project <ul style="list-style-type: none"> You will investigate a particular research problem using the GIS software that you will be using during your lab exercises. Your project will involve application of some spatial analysis acquired from the lab and such being the case your group should acquire spatial data or do some digitization if necessary, depending on the nature of the project Project will be divided into two components <ul style="list-style-type: none"> Project Proposal (5%) – submit one to two pages with the following: a project title, a research question, a list of the spatial and attribute databases you will use, and a conceptual description of the methods you will use. Oral Presentation (15%) – your group will present the project describing data sets used, analyses performed, your findings (display maps, graphs or tabular output) 	20%
Practice Quizzes - unscheduled in-class and online quizzes	5%
Class Activities and Participation	5%

Late assignments will be penalized at 5 points per day. Activities more than 4 days late automatically receive zero points. FYI - if you submit your assignment past the deadline even if it is 1 minute late (*i.e. 12 midnight instead of 11:59 pm*), I will consider that as late submission, so you should plan your time accordingly.

- There will be no make-up on Quizzes and Exams unless accompanied by compelling evidence or in the case of **University-excused absences**.*

Grading Scale

What is the difference between a "B" and an "A"? The following will be your Letter Grade and Percentages to determine your final grade for this course.

Grade	Percentage	Grade	Percentage	Grade	Percentage	Grade	Percentage
A+	98 -100%	B+	87 – 89%	C+	78 – 79%	F	below 60%
A	93 -97%	B	83 – 86%	C	70 – 77%		
A-	90 -92%	B-	80 – 82%	D	60 – 69%		

Course policies/My Expectations:

1. Students are expected to attend (on time) each class and be engaged when they are in class. The class will be interactive if all of us will be involved in discussing and learning the material.
2. For any planned absence, please inform the instructor in advance. It will be your responsibility to track down any missed material, assignments, etc. Any missed work without any supporting evidence will not be accepted.
3. Should circumstances arise that make you late, do not disrupt the class as you enter, take the first available seat and do not walk across the room.
4. In the event of any class cancellation, including inclement weather (e.g. snow), the class will resume where we left off, adjustments, if necessary, will be made later.
5. All students should be respectful to all other students in class or during debate or class discussion forum and simulation activities. It is common knowledge to say that people have different opinions, values and concerns during any assigned debate/discussion, therefore, it is important to maintain respect during class debated and discussion.
6. You should submit your own work in all your written assignments unless otherwise stated like in group activities or group project.
7. Cell Phones must be turned off during class. Zero tolerance!
8. *What do we do about potential disruptions" in class?*

What you can expect from me:

- There will be fair assessment of student work and treat each member of our class with respect.
- Will return your work on time
- Clear communicate of course information
- Available for any additional assistance during my office hours or any other arranged times and respond to your emails on time.

Academic Honesty: George Mason University operates under an honor system, which is published in the University Catalog and deals specifically with cheating, attempted cheating, plagiarism, lying, and stealing. Please familiarize yourself with the honor code, especially the statement on plagiarism (<http://www.gmu.edu/org/honorcouncil/guidelines.htm>). I will respond to acts of academic misconduct according to university policy concerning **plagiarism**. In such cases **Plagiarism** will result in a failing grade of the assignment in question and/or for the course.

University Services

George Mason University has a number of academic support and other resources to facilitate your success. Some of these resources are presented below:

- i. Counseling and Psychological Services [<http://caps.gmu.edu/>]
- ii. University Career Services [<http://careers.gmu.edu/>]
- iii. Writing Resources: Tutors at the Writing Center are available to assist you: Robinson B, room 213, 703-993-1200, writingcenter.gmu.edu
- iv. University Catalog: <http://catalog.gmu.edu/>
- v. University Policies: <http://universitypolicy.gmu.edu/>
- vi. Library Study Rooms: library.gmu.edu/use/study-rooms
- vii. Student Technology Assistance & Resource Center (STAR): Provides all kinds of technology support: JC, room 229, 703-993-8990, bit.ly/2hWjI0y
- viii. Student Support & Advocacy Center: Assistance regarding healthy lifestyle and educational choices: SUB I, suite 3200, 703-993-3686, ssac.gmu.edu
- ix. Food Pantry: Access food and household items: SUB I, suite 3011, pantry@gmu.edu

Students with Disabilities

Students with documented and qualifying learning, physical and psychological disabilities should contact the Disability Services (ODC), which arranges for reasonable accommodations in accordance with the Americans with Disabilities Act and University policies. In order to arrange accommodations in each course, the student must present his/her professors with a letter from the ODC outlining the recommended accommodations at the beginning of the semester. Disability Services (ODC) website: ds.gmu.edu - SUB I, Room 2500. Telephone: (703) 993-2474.

Notice of mandatory reporting of sexual assault, interpersonal violence, and stalking

As a faculty member, I am designated as a “Responsible Employee,” and must 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 one of Mason’s confidential resources, such as Student Support and Advocacy Center (703-380-1434) or Counseling and Psychological Services (CAPS) (703-993-2380). You may also seek assistance from Mason’s Title IX Coordinator by calling 703-993-8730 or emailing cde@gmu.edu.

Diversity Statement

GMU promotes a living and learning environment for outstanding growth and productivity among its students, faculty, and staff. 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 includes, but is 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.

Email Policy

GMU faculty and staff may only correspond with students through the students' GMU assigned email accounts. Emails sent from other accounts will not necessarily be answered. Course information will be shared via email. Please notify me if you would like your email to remain private and not shared with your classmates. Gmail or Yahoo accounts etc. will not be acknowledged.

COURSE SCHEDULE

Date	Lecture and Lab Topics	Readings
8/27	Introductions and Course Overview	None
8/29	GIS History & Concepts	Chapter 1
9/3	Introduction GIS Software	Chapter 1
9/5	GIS Data Collection	Chapter 1
9/10	Geographic Data Models I <i>Group Formation for Final Project</i>	Chapter 2
9/12	Geographic Data Models II	Chapter 2
9/17	Georeferencing	Chapter 3
9/19	Map Projections & Coordinate Systems <i>Exam I Review</i>	Chapter 3
9/24	<i>In-class Activity Database Creation: Digitizing and Georeferencing</i>	Chapter 3
9/26	EXAM I [Chapters 1-3]	
10/1	Maps, Data Entry & Editing I	Chapter 4
10/3	Maps, Data Entry & Editing II	Chapter 4
10/8	Working with attribute data and tables	Chapter 8
10/10	Working with attribute data and tables <i>Group Project Discussion</i>	Chapter 8
10/15	<i>Fall Break (Monday classes/labs meet Tuesday. Tuesday classes do not meet this week)</i>	
10/17	Overview of Basic Spatial Data Analysis <i>Mid-Term Exam Review</i>	Chapter 9
10/22	MID-TERM EXAM [Chapters 4, 8 & 9]	
10/29	Spatial Data Analysis	Chapter 9
10/31	Spatial Data Analysis & Interface	Chapter 9
11/5	Raster Data Analysis I	Chapter 10
11/7	Raster Data Analysis II	Chapter 10
11/12	GIS Data Collection [GPS Field Exercise]	Chapter 1 - Concepts Revisited
11/14	In-class group activity: Map Creation using GPS Field data	Check Blackboard for Reading
11/19	Cartography & Map Production <i>Group Project Discussion</i>	Check Blackboard for Reading
11/21	Digital Data I	Chapter 7
11/26	Digital Data II The GeoWeb <i>Final Exam Review I</i>	Chapter 7 Check Blackboard for Reading
11/27	Thanksgiving Recess (No classes)	
12/3	<i>Group Project Presentation Final Exam Review II</i>	
12/5	<i>Group Project Presentation</i>	
12/10	<i>Reading Day</i>	
12/12	Final Exam	1:30 pm – 4:15 pm

Instructions on **ALL Lab Assignments** can be accessed through the [Blackboard >> Assignment Folder >> GIS Labs](#).
All Lab Assignments are due at 11:59 pm on dates specified on the Blackboard – due dates at a glance.

“This syllabus, like any other courses you have taken, should be perceived as an evolving experience, and from time to time changes might become necessary. As instructor, I reserve the right to modify this syllabus, with the condition that those changes will be communicated to the entire class clearly and in writing.”