

FACULTY CONTACT INFORMATION:

Name : Maction Komwa, PhD
Room : 2414 Exploratory Hall
Office Hours: RF – 1:300 pm – 2:30 pm or by appointment
Email : mkomwa@gmu.edu; Tel: 703-993-5646

GTA	Learning Assistant
Name : Szandra Peter (PhD Student)	Name : Sunil Bharuchi
Office : TBA	Office : GGS Cubicle #
Email : speter26@gmu.edu	Email : sbharuch@gmu.edu
Virtual Office hours: TBA	Virtual Office hours: TBA

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 Prerequisites

There are no formal prerequisites. Some students may find GGS 110 (Maps and Mapping) useful, but it is not required.

Credit Hours for this course: 3

Course objectives

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

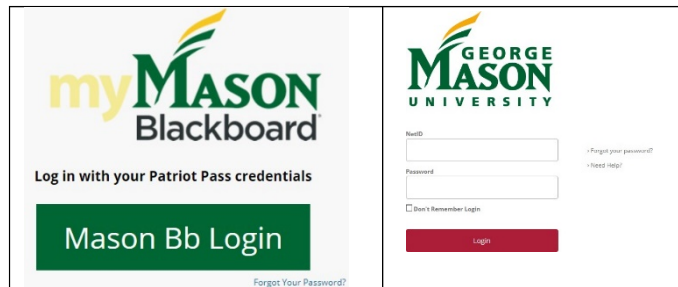
- Demonstrate a broad knowledge base of the fundamental scientific theories, principals and techniques of Geographic Information System.
- Demonstrate an understanding of the societal context of GIS, and articulate important historical events, contemporary developments, and future trends that shape GIS.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

Instructional Methodology

- This is a synchronous learning course – although this is a distance learning course, our classes will occur according to the proposed schedule and time frame [MW – 1:30 pm – 2:45 pm]. We will all be online at the same time through Zoom.
- As a student participating in this Distance Learning course, or considering taking this type of course, it is expected that you have the following:
- Internet Connection
 - Access to high speed connection such as Cable, DSL, or Satellite is recommended
 - Internet Browser Support include:
 - Internet Explorer latest version | Safari version latest version
 - Google Chrome latest version | Firefox latest version
 - Access to software
 - You will need to have access to the most up to date:
 - Adobe Acrobat Reader. <https://get.adobe.com/reader/>;
 - Windows Media Player:
<https://windows.microsoft.com/enus/windows/downloads/windows-media-player/>
 - Apple Quick Time Player: www.apple.com/quicktime/download/
 - MS Word, Excel, etc.
- Required equipment necessary for this course thus including hardware and software (e.g. MS word, etc.), speakers, microphones, or webcams, etc. are the responsibility of the student.

Learning Management Systems

- Blackboard is our course management system which provides access to course materials, assignments, and class discussions. You will log in to Blackboard using your George Mason username and password through this link: <https://mymasonportal.gmu.edu>.



- If you have computer problems, please contact ITS Support Center <http://itservices.gmu.edu>; Email: support@gmu.edu; | Phone: 703-993-8870.

Technology Requirements & Expectations

To participate successfully in an online class, you should be able to:

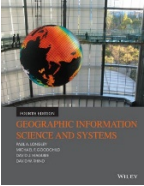
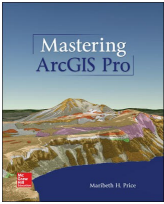
- Use a web browser to visit websites and print web documents.
- You will need access to a Windows or Macintosh computer with at least 2 GB of RAM or more and to a fast and reliable broadband Internet connection (e.g., cable, DSL).
- A larger screen is recommended for better visibility of course material.
- You will need speakers or headphones to hear recorded content and a headset with a microphone is recommended for the best experience.
- Hard Disk Space required to take a distance education course consider and allow for the

storage amount needed to install GIS software and your GIS work.

- **Data Storage:** GIS work requires a lot of space storage. I recommend that you buy a portable US Drive – 5 GB drive or larger. USB Flash drives are available at Patriot Computer, Micro Center, etc.
- Finally, it is extremely important that when you work on GIS Project/Lab assignments, you should consistently back-up your work. Sometimes computer software can crash, and ArcGIS is not exceptional. If you don't save your work, you will be prone to lose your GIS 3-hour work or so!

Required Textbooks:

Students are responsible for buying their textbooks for this course. These textbooks are widely available from a number of sources as a new book, as a used book, and as a rental. Both books are required. The first book (Longley et al., “Geographic Information Science and Systems”, 4th edition) is a traditional textbook that will be used for lectures and exams. The second book (Price, “Mastering ArcGIS”, 8th edition) is a GIS workbook with tutorials and exercises that will be due each week.

	<p>Geographic Information Science and Systems, 4th Edition Paul A. Longley, Michael F. Goodchild, David J. Maguire, David W. Rhind March 2015, ©2016 ISBN: 978-1-119-03130-7 ISBN-13: 978-1118676950 ISBN-10: 1118676955</p>
	<p>Mastering ArcGIS Pro, 1st edition By Maribeth Price Copyright: 2020 Publication Date: January 18, 2019 ISBN10: 1260587339 ISBN13: 9781260587333 Note from Publisher on purchasing options: https://www.mheducation.com/highered/product/mastering-arcgis-pro-price/M9781260587333.html</p>

ArcGIS Software:

This course is completely facilitated Online using Blackboard and Zoom. For all GIS Lab Assignments, we students will use ArcGIS Pro. You will get instructions on how to install ArcGIS Pro on your personal computers (if you are using windows). All instructions will be posted through the Blackboard.

Students owning Macs or owning computer running Linux should be aware that some courses may use software that only runs on Windows, including the primary software tool for this class, ArcGIS Pro v.2.8. You can set up a Mac computer with Boot Camp or virtualization software so Windows will also run on it. This following webpage <https://support.apple.com/en-us/HT201468>) contains information about using Windows on a Mac in bootcamp mode. It is also possible to run Windows using a virtual machine on your Mac. Search “running windows on my Mac”. Computers running Linux can also be configured with virtualization software or configured to dual boot with Windows. Setting up Windows on your Mac can be a bit complicated, and will require some external technical support.

The most dependable student computing lab with ArcGIS Pro installed is **Exploratory Hall, Room 2I02**, which you will have swipe/ID access to all term

Note: If you are using an employer-provided computer or corporate office for class attendance, please

verify with your systems administrators that you will be able to install the necessary applications and that system or corporate firewalls do not block access to any sites or media types.

Performance-Based Assessments - Grading

You will achieve the course learning outcomes outlined above through reading the textbook, preparing and writing reading summaries (reading reflections), participating in online class discussions, working through GIS tutorials, completing lab exercises, and taking online assessment exams at midterm and during finals week.

Reading Reflections: [10 %]

Each student will prepare a bi-weekly 1-page (200 -300 word) reading reflection based on the textbook material from Longley et al. (2015) and from associated lectures. You will be asked to summarize the main points of the reading with a focus on concepts, ideas and themes among many other questions including connection of what you are learning in class to the real-world application. Most of the questions throughout the reading reflection assignments will be generic – no need for you to memorize. The questions will give you the opportunity to reflect about the concepts you have learned from the chapter. The Rubric for Grading this assignment will be posted through the blackboard and will be assessed in these categories: **Exemplary** [15 points]; **Accomplished** [10-12 points]; **Developing** [5-8 points]; and **Emerging** [4 points or less].

Class Discussions: [5%]

There will online bi-weekly discussion aligned with modules. You will share ideas and questions with your classmates. These may include current events from popular news sources, case studies and extra material from the textbook readings, or subjects chosen by the class. Each student will post an original response to the assigned discussion question initiated by the Instructor and respond to the post of another classmate. You will be assessed on your relevant facts and logical connections between text under discussion and the concepts of the module or question that is initiated by the Instructor. The Rubric for grading this assignment will be posted through the blackboard and will be assessed in these categories: **Expected** [5 points]; **Sufficient** [4 points]; **Insufficient** [3 points]; and **Not Completed** [2 points]. An initial post of 25-100 words, and at least one significant reply to a classmate's post of 25--100 words. Check for detailed instructions through the Blackboard.

GIS Exercises [40%]

There will be 9 separate GIS tutorials and exercises, from Price textbook. The GIS tutorials and exercises come from the Maribeth Price, "Mastering ArcGIS" textbook. Completion of the assigned weekly tutorial and the assigned GIS exercises are required, with submissions taking the form of maps, graphics, tables, statistics, written comments, and answers to the assigned exercises. Specific instructions on these requirements will be provided by the Instructor. All GIS Exercises are due at the time noted in the Course Calendar [Sunday – 11:59 pm]. Late GIS exercise submissions (those submitted after the deadline) will be penalized 5 points for each day they are late, and will not be graded after the 8th day. The assigned GIS Exercises are cumulatively worth 40% of the final grade.

Examinations [35%]:

There will be 2 examinations, which must be completed in the prescribed time period. These examinations will cover the textbook, readings as well as the material in the lecture's notes. The exams will include multiple choice questions, definitions, Fill-in the Blanks, and short answer questions. First Exam will be 15% and the *Second Exam* will be worth 20%.

Final GIS Group Project [10%]

You will complete a group GIS project at the end of the semester. Your team will comprise of 3-members. All team members will share responsibility and collaboration toward a common outcome derived from GIS data, analysis, interpretation and presentation. At some point during the semester, we will discuss possible topics for your groups and my approval.

Policy on missed Exams and Assignments

- All due dates are included in the course calendar. Take note suggested time of 11:59 pm is based on Eastern Standard Time and it is your responsibility to adjust your submittal time accordingly.
- Late assignments will be penalized at 5 points per day. Assignments especially Lab Exercises submitted more than 7 days late automatically will be marked Zero.
- There will be no make-ups on Discussion after due date has passed.
- Make-up exams will only be accepted in the event of personal illness or extraordinary circumstances (The Instructor has the right to ask for supporting evidence) or in the case of university-excused absences such as sports, religious holiday etc. If you know in advance that you will not be available during the time when you are supposed to take the exam, please contact me a week prior to the scheduled exam date.

Grading Scale

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%	B+	87 – 89.9%	C+	78 – 79.9%	F	below 60%
A	93 -97.9%	B	83 – 86.9%	C	70 – 77.9%		
A-	90 -92.9%	B-	80 – 82.9%	D	60 – 69.9%		

Student Expectations

Academic Integrity

Students must be responsible for their own work, and students and faculty must take on the responsibility of dealing explicitly with violations. The tenet must be a foundation of our university culture. [See <http://academicintegrity.gmu.edu/distance>].

Honor Code

Students must adhere to the guidelines of the George Mason University Honor Code [See <http://academicintegrity.gmu.edu/honorcode>]. Discussion of work among students is encouraged. Collaboration and active participation in group discussions is important, but final work should reflect your own thinking, and all submitted assignments must be in your own words and reflect your individual work. I

reserve the right to use GMU-sanctioned tools for detecting and documenting plagiarism. If you have questions about what constitutes plagiarism, please ask me.

MasonLive/Email (GMU Email)

Students are responsible for the content of university communications sent to their George Mason University email account and are required to activate their account and check it regularly. All communication from the university, college, school, and program will be sent to students solely through their Mason email account. [See <https://thanatos.gmu.edu/masonlive/login>]. I will not respond to any emails sent through private account(s).

Patriot Pass

Once you sign up for your Patriot Pass, your passwords will be synchronized, and you will use your Patriot Pass username and password to log in to the following systems: Blackboard, University Libraries, MasonLive, myMason, Patriot Web, Virtual Computing Lab, and WEMS. [See <https://thanatos.gmu.edu/passwordchange/index.jsp>].

University Policies

Students must follow the university policies. [See <http://universitypolicy.gmu.edu>].

Responsible Use of Computing

Students must follow the university policy for Responsible Use of Computing. [See <http://universitypolicy.gmu.edu/policies/responsible-use-of-computing>]

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”. Source: <http://ctfe.gmu.edu/professional-development/mason-diversity-statement/>

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>].

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.

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/privacy>]

Student Services and additional University Services

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

1. University Libraries provides resources for distance students. [See http://library.gmu.edu/distanceandhttp://infoguides.gmu.edu/distance_students].
2. University Career Services [<http://careers.gmu.edu/>]
3. 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>]. You can now sign up for an Online Writing Lab (OWL) session just like you sign up for a face-to-face session in the Writing Center, which means YOU set the date and time of the appointment! Learn more about the Online Writing Lab (OWL).
4. Student Technology Assistance & Resource Center (STAR): Provides all kinds of technology support: JC, Room 229, 703-993-8990, bit.ly/2hWjI0y
5. Student Support & Advocacy Center: Assistance regarding healthy lifestyle and educational choices: SUB I, Suite 3200, 703-993-3686, ssac.gmu.edu

Course Schedule/Calendar

Students are responsible for keeping up with the textbook readings, lectures, GIS tutorials/exercises, project deliverables, and assessments. Readings assigned for the week & session should be completed before the scheduled date.

Dates	Readings (Longley)	Pages	Topic	Reading Reflection	Discussion	GIS Exercises (Price)	Exams	
Aug 23	--	--	Course Overview	-	Self- Introduction			
Aug 25	1.1-1.4	pp.3-15	Intro to GIS	-	-	Install/Access ArcGIS Pro	Pretest	
Aug 30 & Sept 1	1.1-1.4	pp.3-15	GIS History & Concepts GIS Hands-on (GTA & LA)		1	Access ArcGIS Pro and GIS Skill Practice		
Sep 6	Labor Day - No Class meeting							
Sep 8	1.4-1.7	pp.15-32	GIS History & Concepts	1		Tutorial 1		
Sep. 13 & 15	6.1-6.3	pp.128-134	GIS Software		2	Price 1		
Sep. 20 & 22	6.4-6.7	pp.135-151	GIS Software	2		Tutorial 2		
Sep. 27 & 29	4.1-4.6	pp.77-85	Georeferencing		3	Price 2		
Oct. 4 & 6	4.7-4.13	pp.86-98	Georeferencing	3		Price 3		
Oct. 12 & 13	3.1-3.4	pp.55-61	Representing Geography		4	Price 4		
Oct. 18	3.5-3.9	pp.62-76	Representing Geography	4		Tutorial 5		
Oct. 20	--	--	Exam 1	-	-	-	Exam 1	
Oct. 25	8.1-8.3	pp.173-183	GIS Data Collection		5	Price 5		
Oct. 27	8.4-8.7	pp.183-191	GIS Data Collection	5		Price 7		
Nov. 1	7.1-7.2	pp.152-167	Geographic Data Modeling		6	Price 8		
Nov 3	7.3-7.4	pp.168-172	Geographic Data Modeling	6		Price 9		
Nov. 8	11.1-11.6	pp.237-265	Cartography & Map Production		7	Price 10		
Nov. 10	12.1-12.9	pp.266-289	Geovisualization	7		-		
Nov. 15 & 17	12.1-12.9	pp.266-289	Finish Geovisualization and Start Group Project Presentation					
Nov. 22	-	-	Group Project Presentation					
Nov 24 - 28	No Class Meeting - Thanksgiving							
Nov 29	5.1-5.5	pp.99-127	Accuracy & Uncertainty	-	-			
Dec 1	Exam Review [GTA, LA]							
De 6	Reading Day – No Class Meeting							
Dec 13	Final Exam [1:30 pm – 4:30 pm]						Final Exam	

NOTE: Any changes to this syllabus will be announced via email and posted on blackboard. For a general university schedule and calendar, see: <https://registrar.gmu.edu/calendars/spring-2019/>