

GGIS 311-003 Introduction to GIS | Fall Session 2018

Instructor information: Maction Komwa, Ph.D.
: Exploratory Hall – Room 2414
Tel: 703-993-5646; email: mkomwa@gmu.edu
Office hours : Tuesdays [1:00 pm – 2:30 pm] or by appointment
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Class Meetings : **TR | 3:00 PM – 4:15 PM**
Location : Exploratory Hall 2310

To

Contact GIS Learning Assistant

GIS Learning Assistant: Kyle Ferris | email: kferris4@masonlive.gmu.edu
Office: GGS Cubicle Office Space
Office hours: Mondays: 10-12 pm | Tuesdays: 9:45 – 11:30 am

Required Textbook:

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

Course description

Fundamental concepts and theories for appropriate use of geographic information systems (GIS). Discusses basic GIS functionality and applications in various fields. This course also serves as the foundation course for other advanced courses in GIS.

Course objectives

This course will focus on the following themes: modern spatial data processing, development, implementation, and functions of geographic information systems; relations between GIS and remote sensing; and applications of geographic information systems to a variety of environmental issues among many other things. By the end of this course you should be able to:

- a. Define Geographic Information Systems
- b. Identify key concepts related to spatial data, basic analysis, and spatial data representation, including GPS data collection, vector and raster data entry and editing.
- c. Identify, compare and contrast vector and raster GIS.
- d. Demonstrate key concepts of spatial analysis using various GIS software applications.
- e. Apply spatial analysis function on GIS spatial problem.
- f. Use the foundation you acquire in this course to prepare you for the other courses at GMU, for internships, and for basic work-related GIS projects.

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 and Exam II]. 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. 40% 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.

Final Project:

You will work in groups of 2-3 to complete a GIS Project. 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 and a brief report with clear project objectives, methodology, data and data preparation steps, analysis, findings and conclusions.

Preparation for your final project should start as early as possible.

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. You don't need to be a computer "guru" to complete your lab assignments but all lab exercises will require a very basic level of computers and Windows operating system. GMU is resourceful enough for students to get these computer skills.

Grading Scale							
Grade	Percentage	Grade	Percentage	Grade	Percentage	Grade	Percentage
A+	98 -100%	B+	88 – 89%	C+	78 – 79%	F	below 60%
A	93 -97%	B	83 – 87%	C	70 – 77%		
A-	90 -92%	B-	80 – 82%	D	60 – 69%		

Summary

- Lab x 10 [40%]. Each Lab will be worth 20 points (equiv. 4% each Lab) – Lowest lab grade will be dropped
- Exam I 20%
- Exam II 20%
- Final Project 10%
- Practice Quizzes x 4 5%
- Participation 5%

Classroom Expectations:

Students are expected to be on time for class. Regular attendance is strongly recommended.

1. 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.
2. 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.
3. For each hour of in-class time you should anticipate three hours to complete out-of-class work and preparation.
4. Cell Phones and pagers must be turned off during class. Zero tolerance!

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. Make sure you check the instructions through the Blackboard on how to write your term papers. If you have questions about when the contributions of others to your work must be acknowledged and appropriate ways to cite those contributions, please talk with the professor.

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. Learning Services, University Career Services [<http://careers.gmu.edu/>]
- iii. Writing Center [<http://writingcenter.gmu.edu/>] and other Learning Services within GMU.
- iv. University Catalog: <http://catalog.gmu.edu/> |
- v. University Policies: <http://universitypolicy.gmu.edu/>

Absences & Accommodations

Students are expected to attend all classes and to complete all assignments on time. Absences may have an adverse effect on grades in a course including failure.

Excused absences: In certain circumstances, absences may be excused. These include:

- **Absence for religious observances:** Students must notify their professors in writing at the beginning of the semester of religious observances that conflict with classes. Students who cannot be accommodated should discuss the matter with a dean.
- **Absence for athletic travel:** Student-athletes must provide their professors with a travel letter at the beginning of the semester which highlights potential absences. Students who cannot be accommodated for some or all absences should discuss the matter with the relevant Academic Coordinator for Student-Athletes.
- **Absence for documented illness:** Students who miss multiple classes due to prolonged illness should seek medical care and provide documentation of such to the Dean's Office, which will communicate with the student's professors. A prolonged absence may necessitate the student's withdrawal from the course or from the University for the semester.

- **At the discretion of the professor:** There may be cases where an absence is undocumented but is, nevertheless, excused by the professor (e.g., absence due to a death in the family). Students should initiate a conversation with their professors about the nature and duration of the absence, in advance of the absence whenever possible.

When absences are excused, students remain responsible for all assigned work, and shall be provided with the opportunity to make up, without penalty, any work that they have missed.

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: <http://ods.gmu.edu/> / Student Union Building I (SUB), 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.

Tentative Outline of Topics, Labs, Reading Assignments and due dates

Date	Topic description	Readings	GIS Lab Session
08/28	Introductions and Course Overview	None	All Labs are due 11:59 pm
08/30	Introduction to GIS	Chapter 1	
09/03	Labor Day		
09/06	Introduction to ArcGIS Software and Data Sources	Chapter 1	
09/11	Data Models I	Chapter 2	Lab 1 , Introduction to the software – <i>due 9/12</i>
09/13	Data Models II	Chapter 2	Quiz I
09/18	Projections & Coordinate Systems I	Chapter 3	
09/20	Projections & Coordinate Systems II	Chapter 3	Lab 2 , Coordinate Systems- <i>due 9/21</i>
09/25	Maps, Data Entry & Editing I	Chapter 4	
09/27	Maps, Data Entry & Editing I	Chapter 4	Lab 3 , Data Entry – <i>due 9/28</i>
10/02	Exam 1		
10/04	Project Description [Work in Groups]		
10/09	Attributes Data & Tables	Chapter 8	Lab 4 , Digitizing, Topology - <i>due 10/10</i>
10/11	Attributes Data & Tables	Chapter 8	Quiz II
10/16	Basic Spatial Analysis I	Chapter 9	Lab 5 : GPS [Practice – No grade] – nothing is due
10/18	Basic Spatial Analysis I	Chapter 9	Lab 6 , Data and Tables – <i>due 10/19</i>
10/23	Basic Spatial Analysis I	Chapter 9	
10/25	Exam II Lab 7, Tables		
10/30	Raster Analysis	Chapter 10	Lab 8 , More Tables <i>Due 10/31</i>
11/01	Raster Analysis	Chapter 10	Quiz 3
11/06	Raster Analysis	Chapter 10	

Date	Topic description	Readings	GIS Lab Session
11/08	GIS Data Collection		Lab 9 , Vector Analysis – <i>due 11/9</i>
11/13	Group Work - Project		
11/15	Map Design, Reading, Analysis and Interpretation		Quiz 4
11/20	Map Design, Reading, Analysis and Interpretation		Lab 10 , Raster Analysis <i>due 11/20</i>
11/21-25	Thanksgiving Recess		
11/27	The Future of GIS Finalizing Group Work - Project		
11/29	Group Presentation I		
12/04	Group Presentation II		
12/06	Group Presentation III		
12/11	Group Project Final Paper		

Syllabus Changes

The course instructor reserves the right to make changes as necessary to the course content and office hours during the course of the term. If these changes are made they will be immediately notified to students through individual emails or the blackboard explaining the nature of the change(s).