Course GGS685: Capstone Course Geoinformatics (3 credits)

Spring 2021

Course Description | Required Textbooks | Course Learning Outcomes | Technology Requirements | Course Schedule | Assignments Description | Course Policies | Grading Scale | University Policies and Resources |

Instructor: Steven Jackson, PE, PhD
Email: sjacks11@gmu.edu
Office hours: Virtual office hours 7:30-9pm Thursday evenings
Add and Drop date information available at: https://registrar.gmu.edu/calendars/spring-2021/

Course Description

This course is intended to provide a capstone experience for graduate students by synthesizing knowledge and experience that they acquired in earlier coursework to address a complex geospatial intelligence problem. The course requires analytical, collaborative, and communication skills.

Blackboard Login Instructions

Access to MyMason and GMU email are required to participate successfully in this course. Please make sure to update your computer and prepare yourself to begin using the online format BEFORE the first day of class. Check the IT Support Center website. Navigate to the Student Support page for help and information about Blackboard. In the menu bar to the left you will find all the tools you need to become familiar with for this course. You should start with the **Start Here: Welcome** tool. Take time to review each tool and become familiar with the course contents. Make sure you run a system check a few days before class. Become familiar with the attributes of Blackboard and online learning.

Required Textbooks

None

Course Learning Outcomes

Develop the skills necessary to write, present, and discuss a journal-worthy paper applying what you have learned in your program of study related to one of the course themes. Through your course of study, you have been developing the ability to generate new science and this course is intended to insure you are prepared to share that new science with others.

This is a graduate capstone course including article-related and paper-related components:

-Article-related Component: Following the initial course information provided during the first two modules, most of the semester will be used to review and discuss journal articles covering a range of geospatially-related topics. We will examine the journal articles to understand which ones did or did not effectively convey their message and we will analyze the techniques employed by the authors to better understand how the articles could be improved. Students will

select the articles each week based on the weekly topics located in the Course Schedule table below. The objective of the article reviews is to develop a critical eye towards academic writing which students will apply to the writing of their papers.

-Paper-related Component: The paper is an opportunity for students to combine the skills learned in this course with the skills learned in their program of study. Students will write a journal-worthy paper and present their work to the class at the end of the semester. Students can write their papers individually or in small groups of no more than three students. Paper proposals will be due in Module 5.

Technology Requirements

Hardware: You will need access to a Windows or Macintosh computer with at least 2 GB of RAM and access 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. You will need a microphone to record audio for some assignments. A headset with a microphone is recommended for the best experience. For Hard Disk Space required taking a distance education course, consider and allow for:

1. the storage amount needed to install any additional software and

2. space to store work that you will do for the course.

If you consider the purchase of a new computer, please go to [Patriot Tech](#) to see recommendations.

Software: This course uses Blackboard as the learning management system. You will need a browser and operating system that are listed compatible or certified with the Blackboard version available on the [myMason Portal](#). See [supported browsers and operating systems](#). Log in to [myMason](#) to access your registered courses. Some courses may use other learning management systems. Check the syllabus or contact the instructor for details. Online courses typically use [Acrobat Reader](#), [Flash](#), [Java](#), and [Windows Media Player](#), [QuickTime](#) and/or [Real Media Player](#). Your computer should be capable of running current versions of those applications. Also, make sure your computer is protected from viruses by downloading the latest version of Symantec Endpoint Protection/Anti-Virus software for free [here](#).

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.

Course-specific Hardware/Software

You must have access to software that will allow you to prepare video responses to assignments. You will need to be able to record video of yourself and/or presentation materials (for example, PowerPoint slides). You will also need to be able to record audio with your presentations.

Course Schedule

MODULES (Monday-Sunday)	TOPIC/READINGS/VIDEOS	KEY ASSIGNMENTS DUE
Module 1 **Jan 24-30**	Course Introduction and Review of Course Structure	
Module 2 **Jan 31-Feb 6**	Overview of Course Themes	
Module 3 **Feb 7-13**	Defining, Planning, and Managing Geographic Investigation	Article Selection Sign Ups due Feb 11
Module 4 **Feb 14-20**	Trends in Spatial Data and Geoinformation Technology	
Module 5 **Feb 21-27**	Vector Analytic Methodologies	Paper Proposals due Feb 25
Module 6 **Feb 28-Mar 6**	Raster Analytic Methodologies	
Module 7 **Mar 7-13**	Artificial Intelligence/Machine Learning (AI/ML)	
Module 8 **Mar 14-20**	Open Data (OpenStreetMap [OSM], twitter, etc.)	
Module 9 **Mar 21-27**	LIDAR-/RADAR-based Techniques	
Module 10 **Mar 28-Apr 3**	Geospatial Aspects of Autonomous Vehicles	
Module 11 **Apr 4-10**	Presentation Preparation	
Module 12 **Apr 11-17**	Live Paper Presentations (part 1) *Thu, Apr 15, 7:20-10pm*	Papers Due Apr 15
Module 13 **Apr 18-24**	Live Paper Presentations (part 2) *Thu, Apr 22, 7:20-10pm*	
Module 14 **Apr 25-May 1**	Course Review	

Assignments Description

1. Course Paper (25%):

Students will be writing a journal-ready paper during the course. The proposal for the paper topic will be less than one page and will provide an overview of the topic (abstract) as well as a list of the student(s) contributing to the paper. The final paper will be due on April 15. The length of the final paper must be appropriate for a journal article covering the selected topic. The final paper will need to include the necessary figures, graphics, and tables to share the specific knowledge. The paper must also be properly and consistently cited using the standard selected by the author(s). A rubric for the paper will be shared in Blackboard.

2. Course Paper Presentation (15%):

Live presentations will be conducted on Thursday evening from 7:20-10:00pm the 12th and 13th weeks of the semester. Students will provide a presentation sharing their paper with the others in the course. The presentation should provide an overview of the content of the paper highlighting the ways in which the lessons learned in the course were implemented in the paper. Following the presentation, the class will discuss the paper. A rubric for the paper presentation will be shared in Blackboard.

3 Article Reflections (25%):

The Articles for each Module will be posted on Sunday. Students are expected to prepare reflections on each of the articles and submit those reflections by Thursday at 7pm prior to the Article Presentation being available. Submitting the reflection each week will provide access to the discussion board for the Module. The purpose of the reflections is to ensure the students have developed an independent assessment of each article prior to participating in the discussion board about the Module's articles. Reflections do not need to summarize the article unless that is necessary to highlight the issues or qualities of the paper the student would like to highlight. Reflections should be 1-2 pages total. A sample reflection and rubric will be posted to Blackboard for reference.

4. Online Discussion Board Posts and Live Discussion Participation (35%):

Students will be required to select articles covering the topics in Modules 4-10. Students will select the topics they wish to cover in their presentations as a part of Module 3. Seven modules will be covered by the students. If more than seven students are in the course, they will be broken into seven groups to work together on modules; however, if fewer than seven students are in the course then they will be required to cover more than one Module to fill out the schedule. One the module(s) when the students are selecting articles, they will select three articles and forward URLs for those articles to the instructor on Sunday no later than 8 pm so the instructor can post the inks to Blackboard. All students will then review the three articles and prepare reflections of the articles.

Students will have several opportunities to participate in discussion boards throughout the semester. Most of the discussion boards will focus on the articles covered in Modules 3-10. Discussion boards will be accessible to students once they have submitted their reflection for each module and will be available through Sunday, after which discussion postings will not count. Students are expected to participate throughout the week in the discussions - not clump them all together on one day (see rubric which will be posted in Blackboard). Each of you should start a minimum of one new thread addressing the articles reviewed in each module (no later than Friday 11:59 pm) AND make a minimum of two comments to threads made by your classmates (no later than Sunday 11:59 PM). You will be given online discussion participation points based on the quality of your responses.

Course Policies

Late Assignments: All assignments must be turned in on the due date given on Blackboard. Late assignments -may- be accepted if approved by the instructor.

Instructor-Student Communication: I will respond to your emails within 48 hours. If I will be away from email for more than one day, I will post an announcement in Blackboard. Before sending an email, please check the following (available on your Blackboard course menu) unless the email is of a personal nature:

- Syllabus & Schedule
- Contact Your Instructor
- On-demand Blackboard videos on how to use Blackboard features, and Technical Requirements.

Technology. You will need a reliable computer and internet access to view course materials in Blackboard. You will need to video record your article presentations with a video camera, such as Kaltura CaptureSpace in Blackboard.

Grading Scale

Grades will be based on the following cutoff values, although I reserve the right to alter the values at the end of the course: A (93%), A- (90%), B+ (87%), B (83%), B- (80%), C+ (77%), C (73%), C- (70%), D (60%)

University Policies and Resources

Academic Honesty: You are expected to be familiar with and abide by the University's Honor Code. The Code can be found here. It is your responsibility to see me if you have questions about these policies. George Mason University has an honor code that states the following:

To promote a stronger sense of mutual responsibility, respect, trust, and fairness among all members of the George Mason University community and with the desire for greater academic and personal achievement, we, the student members of the University Community have set forth this:

Students must follow the university policy for Responsible Use of Computing

Student services: The University provides range of services to help you succeed academically and you should make use of these if you think they could benefit you. I also invite you to speak to me (the earlier the better).

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.

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. Counseling Center: Student Union I, Room 364, 703-993-2380.

Students with disabilities who seek accommodations in a course must be registered with the [George Mason University Office of Disability Services (ODS)](#) and inform their instructor, in writing, at the beginning of the semester. All academic accommodations must be arranged through that office. Please note that accommodations MUST BE MADE BEFORE assignments or exams are due. I cannot adjust your grade after the fact.

Students must follow the university policy stating that all sound emitting devices shall be turned off during class unless otherwise authorized by the instructor.

[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. University Writing Center: Robinson Hall Room A114, 703-993-1200. The writing center includes assistance for students for whom English is a second language.

[Diversity](#): 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.