Course GGS685: Capstone Course Geoinformatics (3 credits)

Spring 2022

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Office hours: Virtual office hours 7:30-9pm Thursday evenings on Blackboard Collaborate Ultra

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.

NOTE: The department made the decision to convert this course to an online format in 2020. The course is now <u>asynchronous</u> online except for the final presentations which are synchronous online. Blackboard is used for course instruction.

Blackboard Login Instructions

Access to MyMason and GMU email are required to participate successfully in this course. Students should make sure to update their computer and prepare themselves to begin using the online format BEFORE the first day of class.

In the Blackboard (MyMason) menu bar to the left students will find all the menu items needed for this course. Students should start with the **Start Here: Welcome** menu item. Take time to review each menu item and become familiar with the course contents. Students should run a system check a few days before class and become familiar with the attributes of Blackboard and online learning.

Required Textbooks

None

Course Learning Outcomes

Students will develop the skills necessary to write, present, and discuss a journal-worthy paper applying what they have learned in their program of study related to one of the course themes. Through their course of study, students have been developing the ability to generate new science and this course is intended to demonstrate they 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. Students will examine the journal articles to understand which ones did or did not effectively convey their message and 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: Students will need access to a Windows or Macintosh computer with fast and reliable broadband internet connection (e.g., cable, DSL). A larger screen is recommended for better visibility of course material. Students will need speakers or headphones to hear recorded content. Students will need a microphone to record audio for some assignments and the final presentations. A headset with a microphone is recommended for the best experience.

Software: This course uses Blackboard as the learning management system. Students will need a browser and operating system that are listed compatible or certified with the Blackboard version available on myMason. (See supported browsers and operating systems). Students log in to myMason to access their registered courses. Students should make sure their computer is protected from viruses by downloading the latest version of Symantec Endpoint Protection/Anti-Virus software for free [here](#).

Note: If students are using an employer-provided computer or corporate office for class participation, they should verify they will be able to access/install the necessary applications and that system or corporate firewalls do not block access to required sites or media types.

Course-specific Hardware/Software

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

Course Schedule

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

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 is due prior to the start of class for the first live paper presentations (Module 12). 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 modules (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 no later than Thursday at 7:20pm. Submitting the reflection provides access to the Discussion Board (see #4 below) 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 have many 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 for modules 3-10 and 14 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 for credit. 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 student should create at least **1 new thread** addressing **each article** in the module (no later than Thursday 8pm) AND make a minimum of **6 comments** to threads made by your classmates (no later than Sunday midnight). Students will be given online discussion participation points based on the quality of the responses.

Selection of articles: 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. On the module(s) when the students are selecting articles, they will select three articles and forward URLs for those articles to the instructor no later than Sunday 8pm so the instructor can post the links to Blackboard. All students will then review the three articles and prepare reflections of the articles.

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.

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.