

# MASTER OF SCIENCE IN GEOSPATIAL ANALYSIS

The Master of Science in Geospatial Analysis (MSGA) program is a unique residential program that focuses on mastering the science and technologies behind the successful application of spatial systems. The MSGA program emphasizes instruction in theory and practical applications related to the capture, management, analysis, and display of spatial information. The program provides students with a technical foundation and geographic knowledge base to apply geospatial tools to a myriad of problems such as crime analysis, transportation engineering, urban planning, emergency preparedness, resource management, facilities management, climate change, and marketing. Theory and technical training will be integrated with the critical thinking, project management, and communication skills required by professionals in the geospatial fields. This is a coherent program designed to assure the mastery of specific knowledge and skills, such as programming within a geospatial environment, report writing, critical spatial analysis and solving problems.

## MSGA Program Mission Statement

To provide an advanced level of education to professionals working or interested in pursuing a career in geospatial technology.

## Admission Requirements for the MSGA Program

- Earned bachelor's degree from a regionally accredited college or university
- Successful applicants typically have a GPA of 3.0 or higher from undergraduate course work. In addition, students are required to have successfully earned credits in at least two college-level GIS classes and in at least one statistics class; in lieu of completed coursework, students can gain admission by providing documented evidence demonstrating they have worked with a GIS, such as ArcGIS, Grass, MapInfo, IDRISI, Intergraph – or the equivalent software – on a range of projects indicating competence in the topics typically covered in upper-level undergraduate GIS. Students may be considered for provisional admission without having previous GIS coursework or related work experience under the agreement that if they are admitted they must take GISC 200 Introduction to GIS **and** GISC 351 Spatial Analysis prior to beginning their graduate-level courses.
- Non-native English speakers will provide evidence of proficiency in English.

## Required Forms and Documents

- Completed application for admission. The application form is found online (<https://admissions.umw.edu/apply/>).
- Official transcripts of all undergraduate and graduate course work.
- A statement of purpose outlining career goals.
- Résumé, stating relevant work experience; applicants without completed coursework in GIS need to provide documented evidence demonstrating their proficiency with GIS.
- GIS Portfolio: a sample of at least one GIS project (as from a work assignment or course) to include a writing sample, which will be used to assess the student's ability to articulate an argument or communicate a set of ideas, and at least three examples of maps created by the student. One should show cartographic ability;

one should demonstrate that the student has performed spatial analysis; and one should illustrate some form of problem-solving. Accompanying text should explain the map purpose and sources used. More examples of work completed by the applicant would be considered favorably. The portfolio itself may be in any format (e.g. PDF, webpage).

- Two letters of recommendation. One should be from a person who can attest to the applicant's GIS or geospatial experience. Both should be from people who know the applicant in either a professional or academic capacity, and can attest to the applicant's graduate potential.
- Demonstration of English competency if English is not your native language. Scores should be sent directly to UMW from the evaluating organization. Any of the following is acceptable:
  - International Language Academy (<https://www.ila.edu/>) (ILA Intensive English Program (Level 12 completion))
  - Test of English as a Foreign Language (<https://www.ets.org/toefl/>) (TOEFL 80 iBT)
  - International English Language Testing System (<http://www.ielts.org/>) (IELTS 6.5 on the academic exam)
- If applicable, the International Student Application Supplement found online (<https://documents.umw.edu/wp-content/blogs.dir/271/files/2011/08/InternationalSupplement2009-.pdf>) should be completed.

Following an initial vetting of applications by University Admissions, an interdisciplinary committee consisting of full-time UMW faculty familiar with the geospatial field will evaluate submitted documents. This committee will determine if students without undergraduate coursework in GIS have sufficient knowledge to succeed in the program.

Students are admitted for the fall or spring semester. Application Due Dates:

- **Fall Admission:** June 1
- **Spring Admission:** October 1

## Deferred Enrollment

Accepted applicants may ask the College of Arts and Sciences for the option of deferring enrollment for up to two consecutive semesters. Each case is considered on an individual basis. Those who are granted deferred enrollment are subject to rules, regulations, and financial charges in effect when they actually enroll. Students who enroll at another institution before enrolling at the University of Mary Washington must reapply for admission. In cases involving military deployment, mobilization, or change in duty assignment, accepted applicants may request to extend the enrollment deferment for longer than two consecutive semesters. Any such requests will be considered on an individual basis. A copy of the person's military orders must be provided to the Office of Admissions to support such a request.

## Readmission to the MSGA Program

Students who have not attended the University for three consecutive semesters, excluding summer session, must apply for readmission through the Office of Admissions. Students who are readmitted are subject to the degree requirements in effect at the time of readmission. When a student is readmitted, the six-year limit from time of first admission is still in effect. Academic work that was completed more than six years before the date at which the MSGA is awarded may not be used to satisfy the degree requirements. If a student needs additional time to complete the degree, the student must apply in writing to the Department

Chair for an extension. Such requests must be received at least one month prior to the end of the student's original six-year time limit.

A student who has been suspended from the program may apply for readmission after a lapse of three semesters. Applicants for readmission must meet current minimum admission requirements. Readmission to the program is not guaranteed.

## MSGA Degree Requirements

To earn the MSGA degree, students must successfully complete MSGA 510 Spatial Thinking w/lab and MSGA 540 Modeling and Spatial Statistics; MSGA 555 Programming for GIS or MSGA 580 Web GIS and Programming; and three other MSGA courses (12 credits) with a cumulative grade-point average of 3.0 or higher. Students who take MSGA 580 Web GIS and Programming in the core cannot also count it as an elective.

All students are also required to complete a 6-credit **capstone project**. At least three (3) credits must be taken in the last semester of the program. This independent project provides students the opportunity to pursue original research in their area of interest. As a capstone project, it will provide a measure of GIS skills acquired from the program and will demonstrate the student's ability to work independently.

Students may propose to take four credits of independent study (MSGA 591 Independent Study) instead of one of the offered elective courses. Students proposing an independent study will work with a faculty sponsor to create a set of readings and assignments culminating in a project equivalent to the assignments in the course for which the independent study is a substitute. Decision on whether to allow a student to pursue MSGA 591 Independent Study will be based on an assessment of the student's work history, publications and reports, interviews with faculty, and the appropriateness of the proposed independent study project. Given appropriate planning, it is possible for the student to build work on a single topic over four successive semesters in the 1-credit format, thereby using MSGA 591 Independent Study to substitute for one of the offered elective courses.

All required course work must be completed within six years of matriculation into the program.

### Completion of the Capstone

The capstone course (MSGA 595 Capstone Project) is available for variable credit, from 1-6 hours. Students must complete 6 credit hours because of the scope and intensity of the effort expected; students are expected to do considerable independent work, averaging approximately 12 hours per week, if taking all 6 credits at the same time, and to report their progress to their course instructor on a weekly basis.

After completion of MSGA 510 Spatial Thinking w/lab and MSGA 540 Modeling and Spatial Statistics, students will be allowed to take anywhere from 1-3 credits prior to the completion of their other coursework. The effort for these credits should be targeted towards the development of their proposal, literature review, and methodology. The last 3 credit hours must be taken in the last semester of the program, and within 1 year of completing all other classes. Full-time students may complete the capstone during the 10-week summer session.

### MSGA Course Requirements (30 credits)

Code	Title	Credits
<b>Required Courses</b>		
MSGA 510	Spatial Thinking w/lab	4

MSGA 540	Modeling and Spatial Statistics	4
MSGA 555	Programming for GIS <sup>1</sup>	4
<b>Elective Courses</b>		
Select three of the following: <sup>2</sup>		12
MSGA 520	GeoDesign And Geovisualization	
MSGA 550	Remote Sensing and Digital Imagery	
MSGA 570	Geospatial Intelligence w/lab	
MSGA 571	Special Topics in Geospatial Analysis	
MSGA 580	Web GIS and Programming	
<b>Capstone/Independent Research</b>		
MSGA 595	Capstone Project <sup>3</sup>	6
<b>Total Credits</b>		<b>30</b>

<sup>1</sup> Students who have completed GISC 450 GIS Programming or an equivalent course at another institution should substitute MSGA 580 Web GIS and Programming for MSGA 555 Programming for GIS. If used as a substitute for MSGA 555 Programming for GIS, MSGA 580 Web GIS and Programming may not be used as an elective.

<sup>2</sup> If approved by a faculty member and the Department Chair, students may substitute 4 credits of MSGA 591 Independent Study for one elective.

<sup>3</sup> The last 3 credit hours must be taken in the last semester of the program.

### Transfer Courses

Ordinarily, a maximum of eight graduate credits can be transferred into the MSGA program. To be accepted for transfer credit, courses must have been taken from a regionally-accredited institution within the last six years with a minimum grade of B and must directly relate to one of the MSGA program courses. Transfer credit is not given for internship or practicum experiences.

### Requirements for Continuance in the MSGA Program

All matriculated MSGA students are expected to maintain satisfactory academic progress in their graduate courses toward completion of the degree program. A cumulative GPA of 3.0 (B) or higher is required for graduation from the program.

Students must maintain a minimum cumulative GPA of 3.0 (B) in each semester to remain in good academic standing, with no more than one grade lower than this benchmark per semester. A student who earns a total of three Cs (including C+, C, or C-) or one F in a graduate course in the program (other than the capstone) will automatically be suspended from the program.

To earn the MSGA, students must earn a minimum grade of B for all capstone credits taken (MSGA 595 Capstone Project). Students who fail to achieve this grade on the last three credits of the capstone will be offered the chance to repeat these credits one time. A student who again earns a B- or below in capstone credits will automatically be dismissed from the program.

**Students who voluntarily interrupt their enrollment for one to three semesters should refer to the Leave of Absence policy in the "Admission and Enrollment" section.**

## College of Arts and Sciences

Keith E. Mellinger, *Dean*  
Grant Woodwell, *Associate Dean*

Melina A. Patterson, *Chair, Department of Geography*

## **Graduate Faculty**

### **Professor**

Stephen Hanna

### **Associate Professors**

Jacqueline Gallagher

Marco Millones Mayer

Ping Yin