UMBC
AN HONORS UNIVERSITY IN MARYLAND

GEOGRAPHIC INFORMATION SYSTEMS GRADUATE PROGRAMS

Rockville, MD

The Systems Side of GIS

UMBC's Geographic Information Systems programs are designed for early to mid-career professionals interested in an understanding of GIS that goes beyond "GIS as a tool for analysis." This forward-looking curriculum is developing the next generation of GIS professionals: those who have a fundamental understanding of the importance of geography as well as an advanced knowledge of the technologies involved in the end-to-end development of advanced Geographic Information Systems. The M.P.S. and Certificate programs provide students with the knowledge, tools and techniques of database management, application development, systems management, and analytical assessment to appropriately address GIS requirements and answer spatial questions. Upon completing the program, students will be able to demonstrate technical leadership in planning, implementing, and managing the enterprise GIS.

Our offerings include:

Master of Professional Studies (M.P.S.):
GEOGRAPHIC INFORMATION SYSTEMS (30 CREDITS)

The courses in this program are explicitly designed to ensure students are exposed to the range of knowledge and technologies central to successful implementation of well integrated Geographic Information Systems. Course content has been developed from the ground up to conform to the GIS&T Body of Knowledge developed by the AAG and UCGIS, and the Geospatial Technology Competency Models developed by the Geospatial Workforce Development Center.

Graduate Certificate in Professional Studies:
GEOGRAPHIC INFORMATION SYSTEMS (15 CREDITS)

Consisting of five courses, the Professional Graduate Certificate in GIS is designed to provide students with a set of core technical and analytical tools which reflect the technical interdependence of the GIS career field. Students may earn this certificate first and then choose to transfer all of the credits into the M.P.S. program.

COSTS

Maryland Resident
Tuition per credit: $585 (plus mandatory fees)*

Non-Resident
Tuition per credit: $968 (plus mandatory fees)*

This program does not offer merit-based financial aid. For more information on tuition and fees, please visit: www.umbc.edu/sbs.

**For Academic Year 2015/2016*

ADMISSION REQUIREMENTS

For M.P.S.:

- Bachelor's degree in geography, computer science or information systems or bachelor's degree in a related field with GIS related work experience
- GRE scores are not required for admission
- Applicants should have a minimum undergraduate GPA of 3.0 on a 4.0 scale

For Graduate Certificate:

- There are no specific constraints on the type of Bachelor's degree required, however students with an academic or professional background in geography, computer science or information systems are encouraged to apply.
- GRE scores are not required for admission
- Applicants should have a minimum undergraduate GPA of 3.0 on a 4.0 scale

International Students:

- B.A. or B.S. in Geography, Computer Science or Information Systems -OR- a bachelor's degree in a related field with GIS-related work experience
- Working knowledge of Geographic Information Systems.
- Minimum undergraduate GPA of 3.0 on 4.0 scale, or equivalent, is desired. Applicants with grades on a scale other than 4.0, will be evaluated based on standards for the country of their degree.
- TOEFL Scores: Minimum of 80 –OR- IELTS Score: Minimum of 6.5

PROGRAM LOCATION:

UMBC at the Universities at Shady Grove
Camille Kendall Academic Center
9636 Gudelsky Drive
Rockville, MD 20850

FOR MORE DETAILS

umbc.edu/gis

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Master of Professional Studies (M.P.S.):
GEOGRAPHIC INFORMATION SYSTEMS (30 CREDITS)

A connecting thread through all of the courses in this program is the development of a model Enterprise GIS. Each course, where appropriate and relevant, contributes elements to the evolution of a demonstration system, providing students with hands-on enterprise system development and a practical experience in building a highly functional GIS.

Select classes are offered in hybrid or online formats.

Degree Requirements

Required Core Courses (18 credits)

GES 670: Advanced Seminar in GIS
This course provides a geographic foundation vital to effective spatial systems development and an introduction to common geospatial tools including ESRI's ArcGIS and Google Earth. A range of topics are introduced and discussed through student projects, presentations, and guest lecturers.

GES 671: Spatial Database and System Design
Students are introduced to the process of spatial database development from data modeling to database implementation in an enterprise environment. Students also learn about database diagramming techniques (e.g., UML), spatial data formats and storage options, database query languages (e.g., SQL), and installation of spatial database software.

GES 673: Geoprocessing and Spatial Analysis
This course covers the manipulation and analysis of geospatial data, and focuses on automated approaches to geographic feature overlay, feature selection and analysis, topology processing, raster processing, and data conversion. This course also addresses the role of geoprocessing and spatial analysis in the definition, management, and analysis of information used to form decisions.

GES 675: GIS Application Development
This course provides a working knowledge of desktop GIS application development to help students understand the logic and structures of programming languages, most notably Visual Basic .NET. A feature of this course is students' ability to conduct applications needs assessments, diagram application logic, develop basic applications, and deploy desktop applications within an enterprise GIS.

GES 678: Project Management of the Enterprise GIS
This capstone course involves advanced study and application of structured analysis and design methods throughout the GIS life cycle. The course stresses common approaches forgathering requirements, modeling, analyzing and designing geographic information systems. The course employs the case method of instruction.

GES 679: Professional Seminar on Geospatial Technologies
These professional seminars expose students to the diversity of issues, applications, and developments in the industry. Seminars focus on a specific topic or issue of importance to the geospatial industry or professional practice. Each student enrolls in three, one-credit, Professional Seminars over the course of their program.

Elective Courses (12 credits)

- GES 770: Special Topics in Enterprise GIS
- GES 771: Advanced Spatial Data Management
- GES 772: Geospatial Web Services and Interoperability
- GES 773: GIS Modeling Techniques
- GES 774: Spatial Statistics
- GES 775: Advanced GIS Application Development
- GES 776: GIS Data Sources, Tasking, and Acquisitions
- GES 777: Advanced Data Modeling and Editing Techniques
- GES 778: Advanced Visualization and Presentation

For complete course descriptions, please visit umbc.edu/gis.

Graduate Certificate in Professional Studies:
GEOGRAPHIC INFORMATION SYSTEMS (15 CREDITS)

- GES 670: Advanced Seminar in GIS
- GES 671: Spatial Database and System Design
- GES 675: GIS Application Development
- GES 679: Professional Seminar on Geospatial Technologies
- Choice of one GIS Elective Course

WHY GIS?

- Geographical Information Science is one of the fastest expanding areas in information technology.
- With an estimated growth rate of 35-40 percent per year, the GIS job market is in need of qualified and experienced professionals to help design, implement, operate and Manage geographic information systems.
- A background and knowledge base in GIS can work in a variety of fields including energy, public health, urban planning, civil engineering, environmental science, archaeology and landscape architecture.

WHY UMBC?

- UMBC's Geographic Information Systems Graduate Programs are led by a distinguished faculty of practitioners in the field.
- Curriculum covers all aspects of the GIS profession: web development and cloud computing, GIS application development, spatial databases, and enterprise systems implementation and management.
- Classes are offered at UMBC-Shady Grove in Rockville, MD, which is conveniently located near Baltimore, Washington D.C. and Northern Virginia.
- Classes are offered in a flexible format, designed for busy working professionals, with hybrid and in-person classes offered in the early evening.