

UNIVERSITY OF CENTRAL ARKANSAS
ACADEMIC ASSESSMENT PLAN
Requirements, Template, and Example

Requirements

1. *Submit with New Program Proposal*
 - a. *Programs are encouraged to consult with the Office of University Assessment.*
 - b. *Contact information assessment@uca.edu*
2. *Send copy of Assessment Plan to the Office of University Assessment, Wingo 215.*
3. *Update the Program Assessment Plan based upon EAPR or Accreditation Cycles.*

Basic Information

Program Name: Master of Geographic Information Systems | Graduate Certificate in GIS

College: Science and Engineering

Department: Geography

Program Level (check all that apply)

- ☐ Associate's
- ☐ Bachelor's
- ☐ Undergraduate Certificate
- X Master's
- ☐ Doctoral
- X Graduate Certificate

Date Plan Submitted: October 15, 2025

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1. Introduction (identify college, unit, and degree programs)

The Department of Geography in the College of Science and Engineering offers a Master of Geographic Information Systems (MGIS) degree designed for working professionals and recent graduates seeking advanced expertise in geospatial technologies and applications. This assessment plan addresses the unique characteristics of graduate-level education while maintaining alignment with professional industry standards and the department's commitment to spatial science excellence. The MGIS program offers two completion pathways: a thesis option for students pursuing research-intensive careers or doctoral study, and a non-thesis (portfolio) option designed primarily for working professionals seeking advanced technical credentials and practical applications of geospatial science. A 15-hour Graduate Certificate in GIS is also offered as a standalone credential and as a stackable pathway toward the full MGIS degree. The Graduate Certificate shares six credit hours of required coursework with the MGIS program, allowing certificate completers to apply those hours toward the master's degree should they choose to continue. This plan addresses assessment for both the

MGIS degree and the Graduate Certificate, which share program outcomes and assessment infrastructure while differing in scope and completion timeline.

The goals of the MGIS Program are: (1) to develop advanced practitioners capable of designing, implementing, and managing complex geospatial projects in professional environments; (2) to provide students with expertise in cutting-edge geospatial technologies, spatial analysis methods, and data management practices; (3) to prepare students for leadership roles in geospatial organizations through the integration of technical skills with project management and communication abilities; and (4) to foster critical thinking and innovation in the application of geographic information science to solve real-world problems across diverse sectors including environmental management, urban planning, emergency response, and business intelligence. The Geography Department at the University of Central Arkansas is dedicated to fostering comprehensive spatial understanding through advanced graduate education, applied research in Geographic Information Science, and promoting excellence in geospatial analysis throughout our professional networks and the broader Arkansas geospatial community.

2. Student Outcomes

The MGIS Program at UCA has identified five essential competencies that reflect the advanced technical and analytical skills expected of graduate-level practitioners in Geographic Information Science. These outcomes recognize that MGIS students typically enter with foundational knowledge and professional experience, requiring assessment approaches that evaluate synthesis, application, and innovation rather than basic concept introduction.

Advanced Spatial Analysis: Students will demonstrate proficiency in complex spatial analysis techniques, including advanced statistical methods, modeling approaches, and multi-criteria decision analysis appropriate for professional geospatial applications.

Geospatial Technology Integration: Students will design and implement comprehensive geospatial solutions using multiple technologies, platforms, and data sources to address complex spatial problems in professional contexts.

Data Management and Quality Assurance: Students will develop and execute data management strategies that ensure accuracy, consistency, and accessibility of geospatial information throughout project lifecycles, including metadata standards and quality control procedures.

Professional Communication and Visualization: Students will create sophisticated cartographic products, data visualizations, and technical communications appropriate for diverse professional audiences, including executives, technical teams, and public stakeholders.

Research Design and Project Management: Students will plan, execute, and evaluate geospatial research projects or professional applications, demonstrating competency in project methodology, resource management, and outcome assessment.

The program's assessment rubric (Appendix B) evaluates student performance on each of these five competency areas using a four-point scale. The five competencies are intentionally broad, as each encompasses multiple skills and knowledge areas that are assessed holistically through thesis, portfolio, or course project submissions rather than through discrete task-level measures. This approach is appropriate for a graduate program emphasizing synthesis and professional application. Program faculty will periodically review rubric performance data to determine whether finer-grained sub-competency distinctions would improve the diagnostic value of assessment; if patterns in student performance suggest that a given competency

encompasses components that students routinely address unevenly, the rubric may be expanded in future assessment cycles to reflect that differentiation.

3. Assessment Cycle

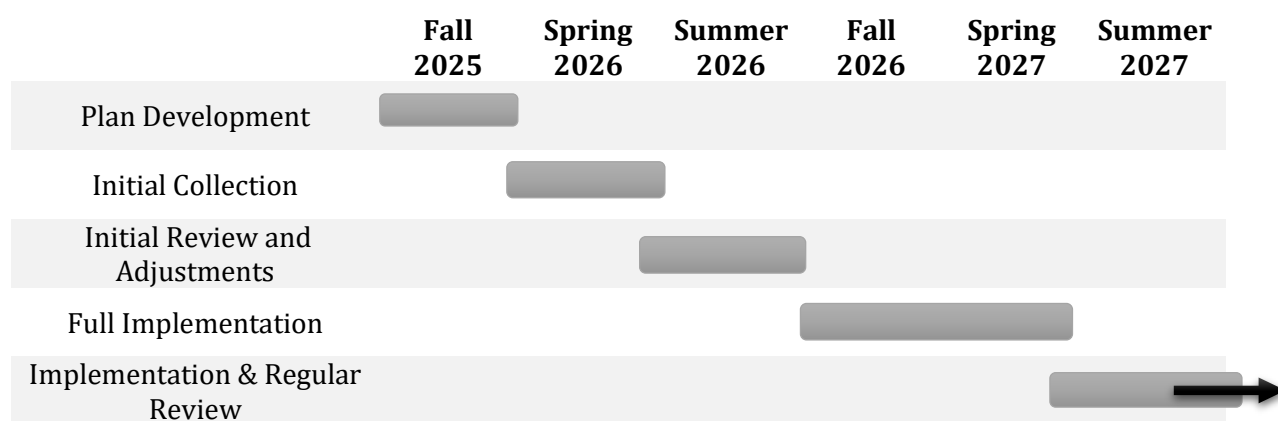
The MGIS Program assessment recognizes the distinct pathways available to students and implements differentiated assessment approaches appropriate to each track while maintaining consistent evaluation of core program outcomes.

Thesis Track Assessment: Students completing the thesis option will be assessed primarily through their thesis research, defense, and related scholarly products. The thesis committee evaluation process serves as the primary summative assessment, with formative assessment occurring through thesis proposal defense and regular committee meetings. Assessment occurs at the point of thesis completion, typically in the student's final semester.

Non-Thesis (Portfolio) Track Assessment: Students in the portfolio track submit a comprehensive professional portfolio during their final semester, demonstrating mastery of program outcomes through materials collected from core courses, two specifically required for all students and three at the discretion of the student. These materials typically include semester research or analysis projects in the identified courses. Portfolio assessment occurs through faculty review using rubrics aligned with program outcomes.

Graduate Certificate: Student seeking the Graduate Certificate take a smaller selection of courses, with six hours overlapping the required hours for the full program. Because GC students seek to complete the requirements in one year, their elective courses typically overlap requirements in the MGIS program, notably those included in the Portfolio.

Assessment Timeline: Given the diverse scheduling needs of working professionals, assessment occurs on a rolling basis as students complete their chosen track. Annual assessment reviews will be conducted each spring semester to evaluate aggregate program outcomes, with comprehensive program review occurring every two to three years. The initial plan will be submitted in Fall 2025 with preliminary data collection in Spring 2026; evaluation of course sequencing and specific requirements for Portfolio and Certificate submission are the focus of the first-year analysis. The first comprehensive review is scheduled for Summer 2027. Given the typical completion timeline for MGIS students, sufficient data for meaningful analysis will be available by the second year of implementation.



4. Curriculum Map

The MGIS Program curriculum is aligned with advanced competencies identified in the Geospatial Competency Model and industry standards for graduate-level geographic information science education. The program builds upon foundational skills students are

expected to possess upon admission, focusing on advanced technical applications, research methodologies, and professional practice. Core courses in the MGIS program are mapped to specific program outcomes with expected proficiency levels reflecting graduate-level expectations. Students are expected to achieve advanced (Level 3) or expert (Level 4) proficiency in all program outcomes by graduation, recognizing their status as emerging professionals in the field.

While required courses differ slightly for the MGIS and Graduate Certificate, the program is designed around well-established Fall-Spring-Summer course rotation that ensures that students in any of the tracks will typically complete the same sequence of courses. The attached Curriculum Map indicates the required courses for the thesis track, Portfolio submissions, and Graduate Certificate; apart from GEOG 6V90 (Thesis Hours), any other course can be used as an elective in all pathways.

5. Assessment Methods and Measures

Graduate-Level Assessment Philosophy

The MGIS assessment approach recognizes that graduate students, particularly working professionals, bring significant prior knowledge and experience to their studies. Unlike undergraduate assessment that often focuses on foundational concept acquisition, graduate assessment emphasizes synthesis, application, and innovation in professional contexts. As noted above, students in the two MGIS tracks (thesis or non-thesis/portfolio) will be assessed based on work submitted in the final semesters of their graduate work.

For thesis track students, evaluation begins during the thesis proposal stage and culminates with the final thesis project and presentation of research results. Assessment is applied on both the submitted written documents as well as performance during the student's defense of the proposal and final thesis. For portfolio students, submission of the comprehensive portfolio of work in core classes occurs in the final semester of coursework. These materials will be evaluated by program faculty based on the student outcomes rubrics described above. Graduate Certificate students will be evaluated on the final course projects submitted in their required MGIS coursework. Because certificate students complete a subset of MGIS core courses, faculty in those courses will apply the program outcomes rubric to major project submissions, with evaluation coordinated by the Graduate Program Director. While certificate students are assessed on the same five program outcomes as degree-seeking students, the scope of evidence is necessarily narrower, reflecting the more focused nature of the credential.

Beyond these direct measures of student performance, several indirect measures will be used in program assessment. These include results of graduate exit surveys and alumni surveys conducted by the University, which can provide insight into student professional preparation and career advancement by graduates. External data included in this evaluation, to include career satisfaction post-degree completion, will inform program success. Time to completion will be considered as an additional measure for assessment, though the part-time status of many MGIS students will require calibration relative to expectations in more traditional programs.

Rationale for Reduced Prerequisite Assessment

Unlike undergraduate programs, the MGIS program admits students with demonstrated academic capability and, frequently, professional experience in related fields. Admission requirements including GPA thresholds, prerequisite coursework, and professional experience serve as quality indicators, reducing the need for extensive incoming student assessment. The

focus shifts appropriately to outcome achievement and professional preparation rather than foundational skill development.

6. Data Collection and Review

Assessment data collection occurs primarily at program completion points, with supplementary data gathered throughout student progress. The rolling admission and varied completion timelines of graduate students necessitate flexible data collection procedures. For thesis, portfolio, and certificate evaluations, forms based on the attached MGIS Outcomes Rubric will be utilized by committee members and faculty to support consistent application of the program outcomes. Data collection occurs continuously as students complete programs, with formal review and analysis conducted annually each spring semester. This allows for timely program improvements while accommodating the timelines typical of graduate education. Graduate students are expected to achieve proficiency levels of 3 (Advanced) or 4 (Expert) in all program outcomes, reflecting the advanced nature of graduate education and professional preparation focus of the MGIS program. If a majority of reviews in a cycle on any given outcome score below Advanced proficiency, the Graduate Program Director will convene a faculty review to examine the relevant course content and assignments. This evaluation will address alignment in course sequencing, more intentional scaffolding of specific course assignments to outcomes, and portfolio course structure.

7. Participation in Assessment Process

All Geography Department faculty involved in GIS instruction participate in assessment activities coordinated by the Graduate Program Director in consultation with the Department Chair. Thesis committee members will complete standardized evaluation forms based on the attached MGIS Outcome Rubric for thesis students while selected non-thesis portfolio review panels, as assembled, will evaluate submissions using the same rubric. Instructors with responsibility in the core MGIS courses will apply the Outcome Rubric to projects done by students in the Graduate Certificate pathway. These instructors make suggestions for assessment materials to be included in these portfolio and certificate review. Periodic external benchmarking will include feedback on program effectiveness from program alumni.

8. Data Analysis

Annual assessment reports will be prepared by the Graduate Program Director in coordination with the Geography Department Chair summarizing outcomes across both program tracks. Analysis will center on quantitative review of rubric scores and program completion rates coupled with a qualitative review of portfolio and thesis quality. These elements are the foundational components of the MGIS program and the focus of the assessment process. Additional analysis will address longitudinal tracking of alumni career progression and any distinctions between outcomes in thesis and non-thesis tracks; these data will be part of the post-graduation surveys done through the Office of Institutional Research. Assessment reports will identify strengths, areas for improvement, and recommended program modifications, with particular attention to maintaining relevance to evolving industry needs and technological advances in geospatial science.

9. Plan for Using Assessment Results to Improve Program

Assessment results will inform program improvements through several pathways, both internal and external to the program itself. Continuous review and adjustment of course content, skill sequencing, and alignment with industry standards is essential in maintaining a robust program.

Additionally, resources for professional development for instructional faculty and technology enhancements will be informed by needs identified by the program assessment. Finally, developing and strengthening external partnerships and opportunities will support stability and growth in career satisfaction for graduates of the MGIS program.

10. What are the plans to evaluate students' post-graduate success?

Post-graduate success evaluation focuses on professional advancement, continuing education, and contribution to the geospatial profession. This will include the standard UCA post-graduation surveys at regular intervals to monitor job placement, salary progression, and professional advancement. A more substantive relationship with graduates of the program will track participation in professional organizations, presentations, publications, and recognition within the geospatial community; these are tangible and meaningful impacts of a strong program. For those students in the thesis track, tracking progression to doctoral programs or advanced certifications will be included. This comprehensive tracking will be done jointly by the Graduate Director and Department Chair.

11. What are the plans to evaluate teaching effectiveness?

Graduate-level teaching effectiveness evaluation includes course-level student assessment each semester, with a focus on skill development and industry relevance in the core curriculum. Because most of the MGIS instructors are employed as GIS professionals, their connection to the evolving needs of the geospatial industry should inform course updates and improvements. As a fully-online program, a particular focus in peer review of instructors will be on faculty engagement via the campus LMS, to meet or exceed the best practices of online instruction.

12. Appendices

Appendix A: MGIS Curriculum Map

Appendix B: Graduate Student Outcomes Rubric

13. Submit Assessment Plan

- Send completed form electronically to assessment@uca.edu

For questions or concerns please contact:
Dr. Jacob Held 450-5307 jmhheld@uca.edu
Alyson McEntire 450-5086 amcentire@uca.edu

	Gateways														
	GIS	Mapping Fundamentals	Digital Image Processing	Health Applications	Database Design & Development	Technical Issues	Spatial Analysis & Modeling	Environmental Applications	Planning and Public Admin GIS	Advanced GIS	GIS Research Methodology	Directed Readings	Directed Research	Thesis	
MGIS Program Alignment: G - req for MGIS, P - req for Portfolio, Y - req for GC															
UCA Geography - Expected MGIS Outcomes	5310	5315	5345	5312	5340	6320	6328	6330	6333	6370	6380	6V60	6V70	6V90	
Advanced Spatial Analysis: Students will demonstrate proficiency in complex spatial analysis techniques, including advanced statistical methods, modeling, and multi-criteria decision analysis appropriate for professional geospatial applications.	2	2	2	3		4	4	4	4	4	3		4	4	
Geospatial Technology Integration: Students will design and implement comprehensive geospatial solutions using multiple technologies, platforms, and data sources to address complex spatial problems in professional contexts.	2	2	2	3		3	3	4	4	4	3		4	4	
Data Management and Quality Assurance: Students will develop and execute data management strategies that ensure accuracy, consistency, and accessibility of information throughout project lifecycles, including metadata and quality control.	2	2	2		4	4	3	3	3	3	3		4	4	
Professional Communication and Visualization: Students will create sophisticated cartographic products, data visualizations, and technical communications for professional audiences, including executives, technical teams, and public stakeholders.	2	3	2	3		3	3	3	3	4	3		4	4	
Research Design and Project Management: Students will plan, execute, and evaluate geospatial research projects or applications, demonstrating competency in project methodology, resource management, and outcome assessment.	2	2	2	2	3	3	4	4	4	4	4		4	4	

Competency Levels: follows UCA Core assesement rubric scores of 1 to 4 scoring.

UCA Geography – MGIS Program Assessment

This rubric assesses the following five areas related to MGIS program outcomes:

Advanced Spatial Analysis: Students will demonstrate proficiency in complex spatial analysis techniques, including advanced statistical methods, modeling approaches, and multi-criteria decision analysis appropriate for professional geospatial applications.

Geospatial Technology Integration: Students will design and implement comprehensive geospatial solutions using multiple technologies, platforms, and data sources to address complex spatial problems in professional contexts.

Data Management and Quality Assurance: Students will develop and execute data management strategies that ensure accuracy, consistency, and accessibility of geospatial information throughout project lifecycles, including metadata standards and quality control procedures.

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Research Design and Project Management: Students will plan, execute, and evaluate geospatial research projects or professional applications, demonstrating competency in project methodology, resource management, and outcome assessment.

How to use this rubric:

- Apply the rubric to thesis research, portfolio submissions, capstone projects, or other comprehensive assessments that demonstrate program outcome achievement.
- For each specific skill or knowledge area, assign a score from 0 to 4 based on the student learning outcome that best matches the performance of the student on the assessment.
- Graduate-level expectations expect that students achieve scores of 3 (Advanced) or 4 (Expert) in all program outcomes by graduation, reflecting the professional preparation focus and advanced nature of the MGIS program.

UCA Geography – MGIS Program Assessment

<u>Specific Skill</u>	<i>Student Learning Outcomes</i>				0
	4	3	2	1	
Advanced Spatial Analysis	Designs and implements sophisticated spatial analysis workflows using multiple advanced techniques. Selects appropriate methods based on data characteristics and research questions. Validates and interprets results with statistical rigor.	Applies complex spatial analysis techniques competently. Demonstrates understanding of method selection criteria and can interpret results accurately. Shows proficiency with multiple analytical approaches.	Uses intermediate spatial analysis techniques correctly but with limited sophistication in method selection or interpretation. Can perform standard analyses but may struggle with complex or novel analytical challenges.	Applies basic spatial analysis techniques with guidance. Limited understanding of when and why to use specific methods. Interpretation of results lacks depth or accuracy.	Assign a zero for performance that does not meet a score of one (1).
Geospatial Technology Integration	Seamlessly integrates geospatial technologies and platforms to create comprehensive solutions. Demonstrates expertise in data interoperability, system architecture, and automation. Develops innovative approaches to technology integration for professional applications.	Effectively uses multiple geospatial technologies and platforms to address complex problems. Demonstrates strong technical skills and understanding of system integration principles. Can troubleshoot and adapt technologies to meet project requirements.	Competently uses several geospatial technologies but with limited integration or workflow sophistication. May struggle with interoperability issues or complex technical challenges.	Uses basic geospatial technologies with guidance. Limited ability to integrate multiple platforms or adapt technologies to specific project needs.	

<u>Specific Skill</u>	<i>Student Learning Outcomes</i>				0 Assign a zero for performance that does not meet a score of one (1).
	4	3	2	1	
Data Management and Quality Assurance	Develops comprehensive data management including quality assurance protocols, metadata standards, and lifecycle management. Demonstrates expertise in data validation, error detection, and quality improvement.	Implements effective data management strategies with appropriate quality control measures. Understands and applies metadata standards and data documentation practices. Can design and execute quality assurance for complex datasets.	Applies standard data management practices with some quality control measures. Basic understanding of metadata requirements and documentation practices. May struggle with complex data quality issues.	Uses basic data management approaches with guidance. Limited understanding of quality assurance or metadata requirements. Inconsistent application of data management principles.	
Professional Communication and Visualization	Creates visualizations and communications that convey spatial information to diverse stakeholders. Demonstrates mastery of advanced cartographic principles and visualization theory. Produces publication-quality materials.	Develops effective visualizations and communications appropriate for professional audiences. Applies sound cartographic and visualization principles. Creates clear, accurate, and engaging products that meet professional standards.	Produces adequate visualizations and communications but may lack sophistication in design or audience adaptation. Basic understanding of cartographic principles with inconsistent application.	Creates basic visualizations with guidance. Limited understanding of design principles or audience considerations. Products may lack clarity or professional appearance.	
Research Design and Project Management	Designs comprehensive projects or applications with sophisticated methodology. Demonstrates expertise in project planning, resource management, and outcome evaluation. Can lead initiatives and mentor others in project development.	Plans and implements well-designed projects or applications. Demonstrates strong project management skills and appropriate methodology selection. Can work independently and adapt plans based on project evolution.	Develops adequate research designs or project plans with some guidance. Basic project management skills with limited ability to adapt to changing conditions or complex challenges.	Requires significant guidance in research design or project planning. Limited understanding of methodology selection or project management principles.	

