

**Department of Geography-Geology**  
**Illinois State University**  
**Program Learning Objectives**  
**M.S. in Hydrogeology**  
**Revised August 2013**

The goal of the MS in Hydrogeology is to deliver a balanced set of core courses which, when combined with other required and elective course, will enable students to become knowledgeable in applied environmental and resource Hydrogeology. Graduates will be capable of either entering the job market capable and ready to perform professional responsibilities or continuing their education to earn a PhD. The MS in Hydrogeology will prepare students.

1. display an understanding and proficiency in physical and chemical hydrogeology
2. develop new groundwater resources and manage existing ones.
3. perform field and laboratory techniques for collection of physical hydrogeologic data.
4. perform field and laboratory techniques for collection of chemical hydrogeologic data
5. display an understanding of the underlying theories and mathematical solutions used in numerical models to solve hydrogeologic problems.
6. be proficient in the use of software to manipulate, display, and interpret hydrogeologic data.
7. be familiar with and discuss current research and techniques in water resources.
8. develop oral and written skills appropriate for an academic, public or private sector career.

Possible secondary outcomes – depends upon which electives are taking during the course of study

1. design and implement an investigation to explore the nature and extent of groundwater contamination and identify potential remedial alternatives.
2. review and evaluate the geologic aspects and possible hazards of engineering designs and proposals.
3. be familiar with the theory and techniques of geophysical applications to groundwater.
4. acquire theoretical and practical knowledge of Geographic Information Systems (GIS) and its use in hydrogeology.
5. display an understanding of statistical theories and their applications in hydrogeology.

**Assessment Plan for the Hydrogeology MS Program at Illinois State University  
Submitted August 20, 2013**

**Students who complete the MS in Hydrogeology are expected to:**

1. display an understanding and proficiency in physical and chemical hydrogeology.

Assessment 1: Rating on GEO 456 final report sections on Hydrogeology and Geochemistry. Our goal is to have at least 80% of our students score at an 85% level or above on each section.

Assessment 2: Exit interview.

2. develop new groundwater resources and manage existing ones.

Assessment 1: Final rating on GEO 456 final report. Our goal is to have at least 80% of our students score at an 85% level on the report.

Assessment 2: Exit interview.

3. perform field and laboratory techniques for collection of physical hydrogeologic data.

Assessment 1: Aggregate score on Slug Test and Pumping Tests assignments in GEO 456. Our goal is to have at least 80% of our students score at the 85% level or above on each assignment.

Assessment 2: Exit interview.

4. perform field and laboratory techniques for collection of chemical hydrogeologic data.

Assessment 1: Aggregate score in GEO 488.0X. Our goal is to have at least 75% or 80%? Of the students receive 90% in the class.

Assessment 2: Exit interview.

5. display an understanding of the underlying theories and mathematical solutions used in numerical models to solve hydrogeologic problems.

Assessment 1: Rating on GEO 456 final report sections on Model Domain and Assumption and Simplifications. Our goal is to have at least 80% of our students score at an 85% level or above on each section.

Assessment 2: Exit interview.

6. be proficient in the use of software to manipulate, display, and interpret hydrogeologic data.

Assessment 1: Aggregate score on data presentation section of final project in GEO 435. Our goal is to have at least 80% of our students score at an 85% level or above on each section.

Assessment 2: Exit interview.

7. be familiar with and discuss current research and techniques in water resources.

Assessment 1: Aggregate score on GEO 439 research paper. Our goal is to have at least 80% of the students receive 85% level.

Assessment 2: Discussion leader score in GEO 435. Our goal is to have 80% of the students score at the 90% level.

Assessment 3: Exit interview.

8. develop oral and written skills appropriate for an academic, public or private sector career.

Assessment 1: Rating on GEO 435 final report. Our goal is to have at least 80% of our students score at an 85% level.

Assessment 2: Rating on GEO 439 final report. Our goal is to have at least 80% of our students score at an 85% level.

Assessment 3: Rating on GEO 456 final report. Our goal is to have at least 80% of our students score at an 85% level.

Assessment 4: >50% of our students to research at a national or regional scientific meeting.

Assessment 5: Exit interview.