

Student Learning Objectives (SLO) for MS and PhD degrees in Geology & Geophysics, approved by vote of GG dept. faculty, May 2013

The matrix on page 2 shows how attainment of each SLO will be measured.

All SLOs will be achieved by passing the noted benchmark. GG Dept. faculty will monitor the progress on the benchmarks in the Graduate Studies Committee Annual Evaluations of students and mark any lapses on the evaluation form.

Student Learning Objectives for the M.S.

1. **Technical knowledge** M.S. graduates are proficient in applying technical knowledge of theory, laboratory methods, field methods, computer applications, and the supporting disciplines (math, physics, chemistry, biology) to help advance the fields of geology and geophysics.
2. **Scientific method (effective and ethical practice)** M.S. graduates are able to (a) construct scientific hypotheses, (b) define and carry out research to evaluate them in a timely manner, (c) analyze and synthesize the results of their research, and (d) derive conclusions that help advance the fields of geology and geophysics. The highest standards of ethical practice are emphasized.
3. **Communicate geological knowledge** M.S. graduate are able to effectively communicate about the findings of their research in writing at a level comparable to that of a scientific journal publication, and defend it orally to the satisfaction of a scientific audience. They are also able to communicate orally about Geology through seminar or conference presentations.
4. **Employability/Contributions Post-Graduation** M.S. graduates have acquired the knowledge and skills in the profession needed to pursue employment or other activities that contribute to the advancement of the Earth sciences and/or the solution of societal problems.

Student Learning Objectives for the Ph.D.

1. **Technical knowledge** Ph.D. graduates are proficient in applying technical knowledge of relevant theory, laboratory methods, field methods, computer applications, and the supporting disciplines (math, physics, chemistry, biology) to advance the fields of geology and geophysics.
2. **Expertise in a sub-discipline** Ph.D. graduates are able to comprehensively synthesize, evaluate, and interpret relevant fundamental knowledge in her or his sub-discipline.
3. **Scientific method (effective and ethical practice)** Ph.D. graduates are able to independently (a) construct scientific hypotheses, (b) design and carry out research to evaluate them in a timely manner, (c) analyze and synthesize the results of their research, and (d) derive conclusions that advance the fields of geology and geophysics. The highest standards of ethical practice are emphasized.
4. **Communicate geological knowledge** Ph.D. graduates are able to effectively communicate the findings of their research in writing at a level comparable to that of scientific journal publications, and defend it orally to the satisfaction of a scientific audience. They are also able to communicate orally about Geology through seminar or conference presentations.
5. **Employability/Contributions Post-Graduation** Ph.D. graduates have acquired the knowledge and skills in the profession needed to pursue employment or other activities that contribute to the advancement of the Earth sciences and/or the solution of societal problems.

GG Department Matrix of Student Learning Objectives (SLO) for MS and PhD degrees in Geology & Geophysics, *approved May 2013*

MS Degree - X = a measurement point for that SLO	courses	Thesis proposal	Oral defense	Written defense	Publications/Conferences		
1. Technical knowledge							
Geology and Geophysics Fundamentals: theory, laboratory methods, field methods, computer applications, and supporting disciplines	X	X					
2. Scientific method (effective and ethical practice)							
a) construct scientific hypotheses	X	X					
b) define research in a timely manner		X					
c) carry out research in a timely and ethical manner			X	X			
d) analyze and synthesize research results			X	X	X		
e) derive conclusions			X	X	X		
3. Communicate geological knowledge							
communicate general geological knowledge	X	X			X		
communicate the findings of their research			X	X	X		
4. Employability/Contributions Post-Graduation							
Professional knowledge and skills needed to pursue employment or other			X	X	X		
PhD Degree - X = a measurement point for that SLO	courses	Qual. exam	Comps exam	Dis. proposal	Oral defense	Written defense	Publications/Conferences
1. Technical knowledge							
Geology and Geophysics Fundamentals: theory, laboratory methods, field methods, computer applications, and supporting disciplines	X	X	X				
2. Expertise in a sub-discipline							
comprehensively synthesize, evaluate, and interpret relevant fundamental knowledge	(X)		X				
3. Scientific method (effective and ethical practice)							
a) construct scientific hypotheses	X	X		X			
b) design research in a timely manner		X		X			
c) carry out research in a timely and ethical manner	X			(X)	X	X	
d) analyze and synthesize research results					X	X	X
e) derive conclusions					X	X	X
4. Communicate geological knowledge							
communicate general geological knowledge	X		X				X
communicate the findings of their research			(X)		X	X	X
5. Employability/Contributions Post-Graduation							
Professional knowledge and skills needed to pursue employment or other					X	X	X

(X) informal assessment point.