MINNESOTA STATE UNIVERSITY MANKATO

Undergraduate Degree Map for Completion in Four Years

College:	College of Social & Behavioral Sciences
Department:	Geography
Name of Program:	EARTH SCIENCE
Degree Designation:	BS
Emphasis/Concentration:	Geology Option
Option:	
Version:	1
Version Explanation:	
Type of Program:	Broad Major
Minor Required:	No
Specific Minor (if required):	

Program Description:

Geology is the study of the Earth, its materials, and its processes. It concerns itself with solving basic scientific problems and utilizing knowledge of the Earth for the benefit of mankind. Its concerns include but are not limited to soil preservation, water production and quality, hazards mitigation, resource exploration and production, engineering of structures large and small, climate change, and the history of life on Earth and the search for life on other planets.

Admission Requirements:

Admission to Major is granted by the department. Minimum university admission requirements are:
- a minimum of 32 earned semester credit hours.
- a minimum cumulative GPA of 2.00 (“C”).

Contact the department for application procedures.

Advising:

You are expected to meet with your advisor on a regular basis to ensure courses are taken in an order that will lead to successful completion of the degree.

A complete listing of program faculty, policies, and course descriptions is available in the undergraduate bulletin.

TERM 1 - FALL

Designator:	Course:	Course Name:	Credits:	Milestones: Overall GPA ≥ 2.0 Course Completion Rate ≥ 67% Completion of ≥ 15 credit hours
GEOL	121	Physical Geology	4	Required for the major and satisfies part of Gen Ed 3, and Gen Ed 10
FYEX	100	First Year Experience	1	Optional Gen Ed. Highly recommended
English	101	Composition	4	Satisfies Gen Ed 1A
Gen Ed 5	n/a	History and Social and Behavioral Sciences	3+	Satisfies part of Gen Ed 5
MATH	121	Calculus I	4	Required for the major, and satisfies Gen Ed 4

Insert item

Term 1 Notes:

If you do not qualify for Math 121, begin the appropriate level math course(s), in sequence, until you qualify for and then complete Math 121.

TERM 2 - SPRING

Designator:	Course:	Course Name:	Credits:	Milestones: Overall GPA ≥ 2.0 Course Completion Rate ≥ 67% Completion of ≥ 30 credit hours Advance to Sophomore status
GEOL	122	Earth History	4	Required for the major and satisfies part of Gen Ed 3
Gen Ed 1b	n/a	Speech and Oral Reasoning	3+	
Gen Ed 6	n/a	Humanities and the Arts	3+	Satisfies part of Gen Ed 6
CHEM	201	General Chemistry I	5	

Insert item

Term 2 Notes:

Consider a Writing Intensive Gen Ed 6 course, two are required. Consider a Gen Ed Purple or course, two are required.

TERM 3 - FALL

Designator:	Course:	Course Name:	Credits:	Milestones: Overall GPA ≥ 2.0 Course Completion Rate ≥ 67%
GEOL	201	Mineralogy	4	Required for the major
PHYS	211	Principles of Physics	4	Required for the major
Gen Ed 11	n/a	Performance and Participation	1+	Satisfies part of Gen Ed 11
Gen Ed 5	n/a	History and Social and Behavioral Sciences	3+	Completes Gen Ed 5
Gen Ed 7	n/a	Human Diversity	3	

Insert item

Term 3 Notes:

Consider a Writing Intensive Gen Ed 6 or 7 course, two are required. Consider a Gen Ed Purple or course, two are required.

TERM 4 - SPRING				
Designator:	***Course:***	***Course Name:***	***Credits:***	***Milestones:*** Overall GPA ≥ 2.0 Course Completion Rate ≥ 67% Completion of ≥ 60 credit hours Advance to Junior status
GEOL	302	Petrology	4	Required for the major
Gen Ed 5	n/a	History and Social and Behavioral Sciences	3+	
Gen Ed 6	n/a	Humanities and the Arts	3+	
Gen Ed 9	n/a	Ethical and Civic Responsibility	3+	
Gen Ed 8	n/a	Global Perspective	3+	

Insert item

Term 4 Notes:

Consider a Writing Intensive Gen Ed course, two are required. Consider a Gen Ed Purple or course, two are required. Strongly consider beginning the GIScience Certificate in Geography.

TERM 5 - FALL				
Designator:	***Course:***	***Course Name:***	***Credits:***	***Milestones:*** Overall GPA ≥ 2.0 Course Completion Rate ≥ 67% Apply for Graduation
GEOL	320W	Sedimentology and Stratigraphy	4	
GEOL	Elective	300/400 Level	3+	
GEOG	Elective	300/400 Level	3+	
Gen Ed 11	n/a	Performance and Participation	1+	
GEOG	Elective	300/400 Level	3+	

Insert item

Term 5 Notes:

Strongly consider beginning the GIScience Certificate in Geography, some of the courses can be electives in the major and the skills are highly marketable. This semester has only 14 credits. Be sure to take an average of 15 credits per term to graduate in 4 years.

TERM 6 - SPRING				
Designator:	***Course:***	***Course Name:***	***Credits:***	***Milestones:*** Overall GPA ≥ 2.0 Course Completion Rate ≥ 67% Completion of ≥ 90 credit hours Advance to Senior status
n/a	n/a	Additional 300/400 course	3+	
GEOL	330	Structural Geology	4	
GEOL	Elective	300/400 Level	3+	
GEOL	Elective	300/400 Level	3+	
GEOG	Elective	300/400 Level	3+	

Insert item

Term 6 Notes:

Capstone requirement for the major commonly is satisfied by Geology field camp, which is a Summer course usually taken between junior and senior years. Other means of satisfying capstone requirement are internships and substantial independent study projects.
Strongly consider beginning work on Certificate in Geographic Information Science (GISc), i.e., take GEOG 373 - 4cr, or perhaps a second major, although one is not required.

TERM 7 - FALL

Designator:	Course:	Course Name:	Credits:	Milestones: Overall GPA ≥ 2.0 Course Completion Rate ≥ 67%
n/a	n/a	Additional 300/400 courses	15	

Insert item

Term 7 Notes:

Strongly consider continuing work on Certificate in Geographic Information Science (GISc), and/or taking additional Earth Science (Geology, Geography) courses to build greater knowledge and skills.

TERM 8 - SPRING

Designator:	Course:	Course Name:	Credits:	Milestones: Overall GPA ≥ 2.0 Course Completion Rate ≥ 67%
n/a	n/a	Additional 300/400 courses	15	

Insert item

Term 8 Notes:

Strongly consider continuing work on Certificate in Geographic Information Science (GISc), and/or taking additional Earth Science (Geology, Geography) courses to build greater knowledge and skills.

PROGRAM NOTES

1) Capstone requirement commonly is satisfied by Geology field camp, which is a Summer course usually taken between junior and senior years. Other means of satisfying capstone requirement are internships and substantial independent study projects.
2) Geology electives taught alternate years: GEOL 350 (Environmental Geology) alternates with GEOL 450 (Hydrogeology) (both are Spring semester courses); GEOL 401 (Field Studies Northern Minnesota) alternates with GEOL 430 (Petroleum and Ore Deposits Geology)(both are Fall semester courses). Minimum requirement is for 7 - 8 credits of Geology elective; Geology Option students are encouraged to take more.
3) Geography electives include GEOG 315 (Geomorphology), GEOG 373 (Introduction to Geographic Information Systems), GEOG 420 (Conservation of Natural Resources), GEOG 471 (DIgital mapping with GPS), and GEOG 474 (Remote Sensing). All are taught in the Fall; GEOG 373 is also taught in the Spring. Minimum requirement is for 6 - 8 credits of Geography elective; Geology Option students are encouraged to take more.
4) Geology Option students are strongly encouraged to take additional chemistry (e.g., CHEM 202 General Chemistry II), math (e.g., MATH 122 Calculus II), and physics (e.g., PHYS 212 or PHYS 213 (Principles of Physics II and III, respectively); PHYS 221 (Calculus-based Principles of Physics I) and PHYS 222 or PHYS 223 are desirable). This is especially encouraged if the student is contemplating graduate study.
5) The Certificate in Geographic Information Science provides skills in geospatial technologies that are critical in the workforce today. We cannot encourage you enough to complete this certificate.
6) In Earth Science and Geology, more math is better. Strongly consider math through Calculus I and II and Ordinary Differential

DEGREE MAP CHECKLIST: GRADUATION REQUIREMENTS

☑	1. Minimum of 15 credits per semester

☑	2. General Education = 44 credits
☑	3. Diverse Cultures = 2 course (6 credits minimum) from two disciplines
☑	4. Writing Intensive = 2 courses (6 credits minimum)
☑	5. Major = 54 credits
☑	6. Upper-Division Requirements = 40 credits minimum
☐	7. Professional Education (if required) = 30 credits
☐	8. Language Requirements (if BA) = 8 credits minimum
☐	9. Minor = credits
☑	10. Total credits required for degree 120

DEGREE MAP COMPLETE	
☑	Map is complete and ready for review 1. Faculty please send an email to your Department Chair when map is ready to review. 2. Department Chair please send an email to your Dean when map is ready to review. 3. Dean please send an email to the Assistant Vice President for Undergraduate Studies when map is ready to review.

DEAN APPROVAL	
☑	Map reviewed and approved by Dean

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