



Bachelor of Science in Geological Engineering

2022-2023

Revised 3/25/2022

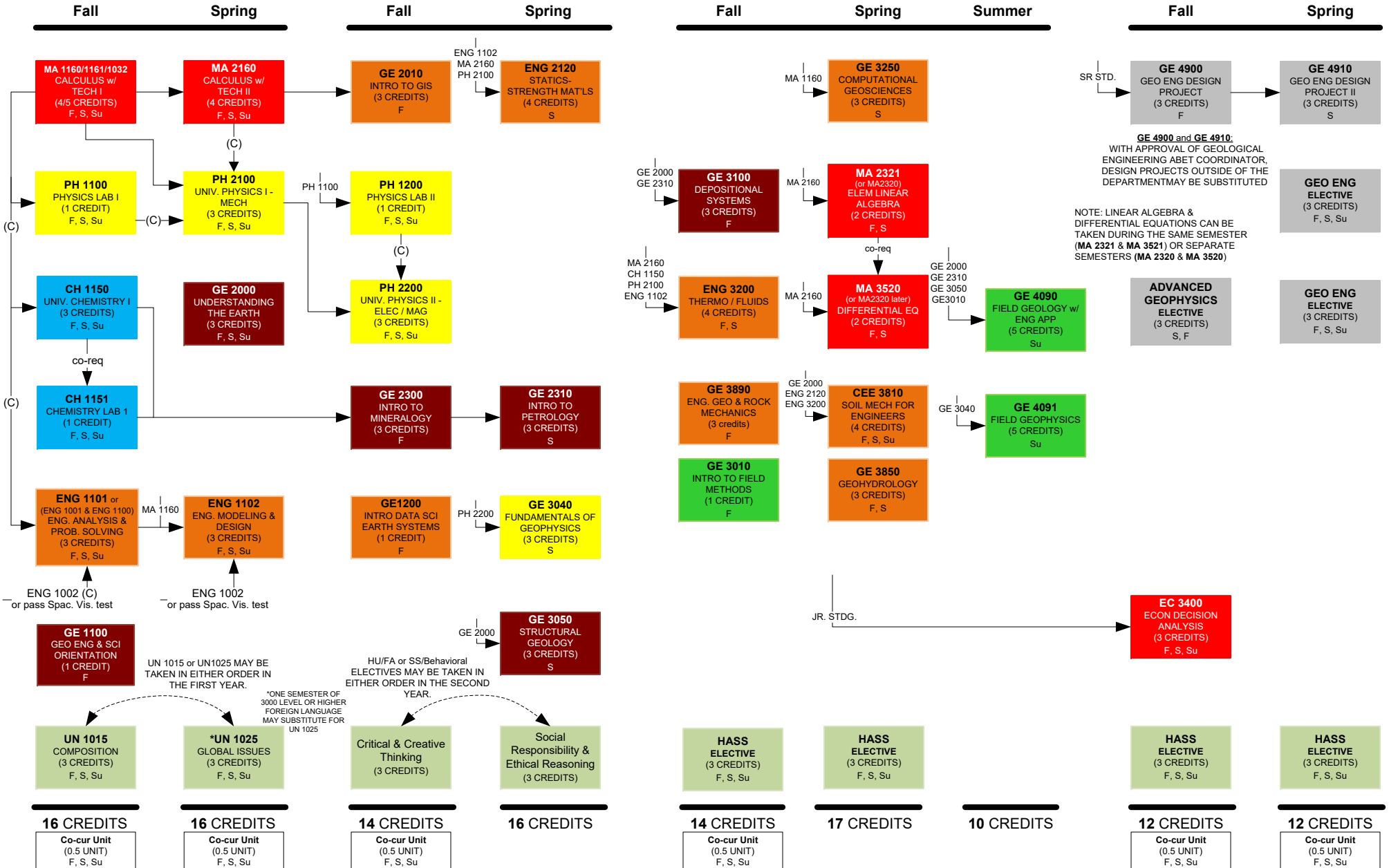
- PREREQUISITE (COURSE MUST BE COMPLETED PRIOR TO ENROLLMENT)
- (C)— CONCURRENT PREREQUISITE, PREREQ. THAT MAY BE TAKEN SIMULTANEOUSLY WITH THE COURSE
- F INDICATES COURSE IS OFFERED FALL SEMESTER
- S INDICATES COURSE IS OFFERED SPRING SEMESTER
- SU INDICATES COURSES IS OFFERED SUMMER SEMESTER

Year 1

Year 2

Year 3

Year 4



BS in Geological Engineering 2022-2023

(Minimum of 127 Credits)

Geological Engineering Electives

Nine credits of Geological Engineering Electives are required. Prerequisites not normally required must be satisfied by free electives or other courses not specifically listed. With approval of Geological Engineering ABET Coordinator, Geo Eng electives may be substituted with Independent Geological Engineering Research and/or Cooperative Lab.

Enterprise Concentration (12 Credits)

With permission of Geological Engineering ABET Coordinator, enterprise may substitute 6 credits of interdisciplinary project for GE 4900 and GE 4910; 3 credits of required communication, teaming or business must be double counted as Distribution (HASS) credits; and 3 credits of enterprise instructional modules must be substituted for free electives.

Enterprise Minor: Follow concentration, plus take 6 additional credits beyond required degree as per minor requirements.

Second Degree Policy: Candidates for a second degree must meet all the coursework requirements for the major in the second degree with a minimum of 25% of the credit hours required for the degree, beyond the primary degree.

Geological Engineering Advanced Technical Electives

Course Title	Offered	Prerequisite(s)
GE 3400 Drilling and Blasting	FA	GE 2020, PH 2100
GE 4150 Natural Hazards	FA	(GE 2000 or GE 2100), UN 2002
GE 4360 Materials Handling	SP	PH 2100
GE 4504 Air Quality Engineering and Science	FA	ENVE 3501 or ENVE 3503
GE 4610 Formation Eval. & Petrol. Eng.	FA	
GE 4800 Groundwater Eng.	On Demand, typ. SP	GE 3850
GE 4860 Computer Methods in Geomechanics	SP	GE 2000, ENG 2120, (ENG 3200 or ENG 3507)
GE 3880 Mine Planning & Design	SP	GE 2320, GE 3400, GE 3870
GE 4680 Open Research for Mining Engineers	On Demand	GE 2020 or GE 2320
ENVE 3503 Environmental Engineering	FA, SU, SP	
GE 3870 Resource & Reserve Estimation	FA alternate years	GE 2020, MA 3710
CE 3331 Professional Practice	FA, SP	(MA 2150 or MA 2160), (CH 1100 or CH 1110)
CE 3332 Fund. Constr. Engineering	FA, SU, SP	
CE 3620 Water Resources Engineering	FA, SP	
CE 4010 Introduction to Consulting Eng	SP	(ENG 3200 or ENG 3507), (MA 3710(C) or ENVE 3502(C) or CE 3710(C))
CE 4820 Foundation Engineering	FA	
CE 4830 Geosynthetics Engineering	SP	CE 3201, CE 3810
CE 4850 Rock Engineering for Civil Eng	SP alternate years	CE 3810

NOTE: Special Topics Courses focusing predominantly on applications of engineering to geological engineering systems/projects may also be used with prior approval by a GE Advisor. Additionally, with prior approval from advisor, student may choose other technical electives. Many appropriate senior-level engineering courses are offered in Civil & Environmental Engineering on topics related to those listed above. Adv. Geophysics Elective Courses (see list below) can be taken as Technical Electives for BSGE students.

Advanced Geophysics Electives

Course Title	Offered	Prerequisite(s)
GE 4560 Earthquake Seismology	FA	GE 3050, PH 2100, MA 3160
GE 4600 Reflection Seismology	SP	GE 3040
GE 4610 Formation Eval. & Petrol. Eng.	FA (depends on demand)	

NOTE: a GE Advisor may also use special Topics Courses focusing predominantly on applications of geophysics in geological engineering projects with prior approval.

General Education Requirements

(https://www.mtu.edu/registrar/pdfs/core-and-hass-list-21-22.pdf)

I. Core Courses (6 Credits)

___ UN 1015 ___ UN 1025*

* Or one semester of a 3000 level or higher modern language.

II. Sophomore Core Courses (6 Credits)

Creative and Critical Thinking (HU/FA) _____

Social Responsibility and Ethical Reasoning (SS) _____

III. Hass Course Requirements (12 Credits)

(https://www.mtu.edu/registrar/pdfs/core-and-hass-list-21-22.pdf)

- 6 credits 3000- or 4000- level

- 3 credits required from each of these 3 lists:

Communication and Composition, Humanities and Fine Arts (HU/FA), and Social and Behavioral Sciences (EC/PSY/SS)

- No more than 3 credits on the Restricted HASS List

A. 6 credits 3000- or 4000- level:

1. _____ 2. _____

B. 6 credits at any level:

1. _____ 2. _____

IV. Co-curricular activities (3 units)

The co-curricular requirement consists of three semester units of physical education activities. These units are required for graduation, but are not included in the overall degree-credit requirement.

Note: Most physical education activities will last for 7 ½ weeks or ½ semester. A student would need **six** of these ½-semester units to fulfill the 3-semester unit co-curricular requirement.

PE _____ PE _____ PE _____

PE _____ PE _____ PE _____

BS Geological Engineering Curriculum Overview (127 Total Credits)

- General Education & Free Electives
- Chemistry
- Physics & Geophysics Fundamentals
- Calculus, Statistics, Linear Algebra, Differential Equations, & Economics
- Physical Geology, Mineralogy, Petrology, Structure & Depositional Systems
- Applied Engineering Fundamentals, Geohydrology & Geotechnics
- Field Geology & Geophysics
- Professional Electives & Capstone Experience

