Annual Program Report
2022-2023

The report(s) should be inclusive of all levels, degrees (i.e. certificates, bachelor's and master's), modalities and locations.

Department: Earth and Geographic Sciences

Department Chair: Elizabeth Gordon

Department Assessment Committee Contact: Reid Parsons

This document is to be kept in the department and an electronic file is due to the AVP of Institutional Research and Planning by June 1, 2023.

Section I: Program Assessment (please complete this section for each program in your department)

Program: Environmental and Earth Science

A. Program Learning Outcomes (PLOs) (Educational Objectives)

I. List of PLOs and the timeline for assessment

PLO #	PLO – Stated in assessable terms	Where are the learning outcomes for this level/program published? (please specify) Include URLs where appropriate.	Timing of assessment (annual, semester, bi-annual, etc.)	When was the last assessment of the PLO completed?
1.	Students will communicate scientific information through written, oral, and graphical expression with clarity, logical organization, and use of	https://www.fitchburgstate.edu/academics/programs/environmental-and-earth-science-babs	Annual	AY21

	scientific evidence to support their ideas.			
2.	Students will use the scientific process, including experimental design, analysis, and critical evaluation of information, and integration of evidence from relevant sources, in the context of environmental investigations.		Bi-annual	
3.	Students will discuss the structure and composition of Earth's interior, surface, and atmosphere, and explain what it means to consider Earth as a system.		Annual	AY21
4.	Students will apply an interdisciplinary approach to analyze and propose solutions to environmental science problems.		Bi-annual	AY19
5.	Describe the complex interactions between humans and their environment, including		Bi-annual	AY21

	geological hazards, air and water pollution, global environmental issues, and use and conservation of Earth's resources.			

II. **PLO Assessment** (Please report on the PLOs assessed and/or reviewed this year. Programs should be assessing at least one each year.)

Using the table below, list and briefly describe the **direct method(s)** used to collect information assessing whether students are learning the core sets of knowledge (K), skills (S) and attitudes (A) identified as essential.

PLO # (from above)	**Assessment description (exam, observation, national standardized exam, oral presentation with rubric, etc.)**	**When assessment was administered in student program (internship, 4th year, 1st year, etc.)**	**To which students were assessments administered (all, only a sample, etc.)**	**What is the target set for the PLO? (criteria for success)**	**Reflection on the results: How was the "loop closed"?**
1	Final paper in Geology	1st - 2nd year	all majors in course (n = 4)	80% of students proficient or better	Address skills gap
2	Final Project in Geomorphology - Conduct a stream survey and interpret influence of dam structure on stream morphology	2nd - 4th year students	all majors in course (n=11)	80% of students proficient or better	Instead of delegating data collection tasks to individuals of the group, may need to have students rotate

					through different observations to gain experience collecting each type of data.
3	Final exam in Earth Systems Science (GEOG1000)	1st year	all majors in course (n = 5)	90% of students proficient	Emphasize the connections between Earth spheres more
4	Final project in Water Resources and Society - create a water plan for a water-stressed city 50 years in the future	1st - 4th year students	all majors in course, (n = 7)	80% of students proficient or better	Students struggled with meeting the minimum requirements of the assignment, this may be improved by requiring a rough draft of the final project

You may use this comment box to provide any additional information, if applicable:

Summary of Findings: Briefly summarize the results of the PLO assessments reported in Section II above combined with other relevant evidence gathered and show how these are being reviewed/discussed. How are you "closing the loop"?

Reflection Prompt	Narrative Response
Other than GPA, what data/ evidence is used to determine that graduates have achieved the stated outcomes for the degree? (e.g., capstone course, portfolio review, licensure examination)	**PLO1:** Final project for Geology. This is a required 2000-level course for our majors typically taken in their 1st or 2nd year. Final project is to examine the geology of a national park. - 75% (4/4) of students were able to find academic peer-reviewed sources from library databases - 50% of students properly cited the sources they used for the final paper, both in the works cited section and as in-text citations - 100% of students displayed the ability to summarize and effectively communicate applied scientific information - 75% of students effectively used figures and figure captions within the text of the paper **PLO2:** Final project for Geomorphology. This is a required course for our majors typically taken in year 3 or 4. - 100% (11/11) Could demonstrate use of field equipment to conduct stream survey and collect data on stream gradient, discharge, pebble counts, and cross sections - Through group presentations, a subset of the class (4 of 11 students) communicated their analysis/synthesis of data to demonstrate how stream morphology was influenced by a dam structure **PLO3:** Final exam for GEOG1000. This is a required course taken by freshman or transfer majors. Exam question is a cumulative question in which students interpret how a change to

	Earth's system as a whole affects different spheres (hydrosphere, geosphere, atmosphere, biosphere). - 80% of students were able to recall and define the different Earth spheres - 60% of students were able to effectively analyze how a change in Earth's system would influence the individual spheres **PLO4**: Final project for Water Resources and Society. This is an elective course for our majors typically taken by 1st - 4th-year students. - 100% (7/7) properly cited and formatted their sources - 86% (6/7) demonstrated a satisfactory understanding of the complexity of the issues of water supply (economical, societal, environmental factors) - 57% (4/7) evaluated and synthesized interdisciplinary data (economical, societal, environmental) in order to propose a solution to an environmental problem (loss of freshwater supply)
Who interprets the evidence? What is the process? (e.g. annually by the curriculum committee)	**PLO1:** Instructor interprets the evidence using a grading rubric. **PLO2:** Instructor interprets the evidence based on the quality of written report and oral presentation using a rubric. **PLO3:** Instructor grades exam with a key detailing how many points would be earned on an answer containing key words or phrases **PLO4:** Instructor interprets the evidence using a grading rubric.

What changes have been made as a result of using the data/evidence? (close the loop)	**PLO1:** The instructor will spend more time on the mechanics of scientific writing in the next iteration of this project. Specific skills to be addressed include: how to find peer-reviewed academic sources, how to utilize in-text citations, and how to use figures and figure captions effectively. **PLO2:** The instructor will set aside more time during the final stages of the project to give each individual student an opportunity to gain skill in collecting each type of data and to communicate their interpretation of the data collected. The group structure made it possible for each type of data to be collected in a timely manner, and gave an opportunity for students to gain skill in working in groups but students would benefit from being able to rotate through each type of data collection (longitudinal profile, discharge, cross-section, and pebble count) and individually interpret the results of this data. **PLO3:** The instructor will spend more time emphasizing the different Earth spheres and how changes to one part of the Earth system affects all other spheres within the system. Currently, this concept is discussed in the first couple of weeks of the semester, then again near the end of the semester. Instructor will try to emphasize this concept as each new sphere is introduced in class. **PLO4 :** When this course was last assessed in 2020, the course was being offered in a hybrid format. The return to fully in-person learning coupled with classroom discussions and questions on tests asking for applied answers to complex problems seems to have improved some deficiencies from prior assessment. When the course is next offered, the instructor will require multiple deadlines (topic approval, rough draft, then final paper) to encourage students to begin work on the project earlier, ideally to help students meet the bare minimum requirements for the project. The instructor will also change the final lectures of the semester to discuss solutions to problems in water-stressed cities. Only 57% of the students were able to propose well-rounded solutions to the environmental problem of losing water supply, meaning students need to be able to better evaluate the problem from multiple viewpoints (economic, environmental, societal, etc.)

B. Assessment Plan for Program/Department

I. Insert the program or department Assessment Plan (This is an independent plan from what is reported in this document).

II. Explain any changes in the assessment plan including new or revised PLOs, new assessments that the program/department plans to implement and new targets or goals set for student success.

III. If you do not have a plan, would you like help in developing one? ___Yes

C. Program Review Action Plan or External action Letter/Report

Annual Reflection/Follow-up on Action Plan from last Program Review or external accreditation (only complete the table that is appropriate for your program

I. **Programs that fall under Program Review:**

i. Date of most recent Review: Oct 2020

ii. Insert the Action Plan table from your last Program Review and give any progress towards completing the tasks or achieving targets set forth in the plan.

see attached

iii. If you do not have an action plan, would you like help in developing one based on your last program review and needs of the program? _____Yes

II. Programs with external Accreditation: N/A

Section II - Departmental Outcomes

A. Departmental Strategic Initiatives

Accomplished Initiatives AY22-23 **Add more rows as needed**	**Corresponding Strategic Plan Goal & Strategy** **Goal # followed by Strategy # ex: 1.3**	**Indicate (X) if a Diversity, Equity and Inclusiveness (DEI) Goal**

Integrate career preparation into advising; examine ways to ensure equitable access to high impact practices: -As part of an interdepartmental AIF grant (AY23), Reid Parsons led the effort in our department to streamline and clarify the internship process for students. This was follow-up work to developing career action plans for two of our majors the previous year (EES, GST). -The PHS career action plan was completed during this academic year. -While still a work in progress, the internship guide that was created as part of this effort will facilitate access to internships and other high impact practices for our majors. This work also provided the basis for which an APR position will be granted in the upcoming AYs to support student participation in HIPs, which will also expand access to opportunities for internships.	**2.5** *Integrate career services into departments and curriculum, and build more consistent career advising across campus, especially for first-year students and sophomores.*	x
Expand opportunities for student research and other high impact practices, including study abroad: -In addition to the efforts noted above to improve access to HIPs, one of the goals of our action plan from our previous self study was to explore opportunities for course-based research. Reid Parsons reframed Geomorphology this AY to create a course-based research project. -Five students participated in grant-funded research projects during this academic year. -The first Study Abroad course from the department is being offered this academic year. Jane Huang will lead students to Peru at the end of May.	**1.2** *Establish a learning environment in which academic and co-curricular programs work in synergy to offer applied learning experiences that prepare students for purposeful personal and professional lives.*	
Develop pathways/Early college offerings: -Our department offered an Early College/UBMS course last summer. We plan to offer a course again summer 2024.	**2.1** *Achieve a cultural shift around how we advise, mentor, and teach all students, especially traditionally underrepresented and*	x

-An articulation agreement between Fitchburg State and MWCC was created for Allied Health students to transfer directly into the PHS major.	*underserved students, so that we meet them where they are.*	
Curricular revisions -The department added new courses to the curriculum, and revised our major curricula accordingly. -Faculty from the department participated in a collaboration with Mathematics and Computer Science to create the new Data Analytics minor. Faculty from the department participated in discussions with other departments to develop a Sustainability Studies major and minor.	**1.3 and 1.4** *3.Promote greater interdisciplinary teaching and develop innovative combinations across academic departments.* *4. Leverage existing curricular strengths to develop new programs that meet demand and forge deeper connections between our curriculum and community needs*	

Planned Initiatives for AY 23-24 **Add more rows as needed**	**Associated Strategic Plan Goal & Strategy** **Goal # followed by Strategy # ex: 1.3**	**Indicate (X) if a Diversity, Equity and Inclusiveness (DEI) Goal**
Cross-walking curriculum to career action plans With career action plans completed for each of our three majors, this year's work will map each major's curriculum to the career competencies.	**2.5** *Integrate career services into departments and curriculum, and build more consistent career advising across campus, especially for first-year students and sophomores.*	x
Continued curricular innovation -The department's recently acquired drone will be incorporated into learning activities in our *Remote Sensing* course this fall. This will expand students' technology skills that can be used in the workforce. -Initiate discussions with other relevant departments, especially Biology/Chemistry, regarding the development of a field techniques	**1.2 and 1.3** *2. Establish a learning environment in which academic and co-curricular programs work in synergy to offer applied learning experiences that prepare students for purposeful personal and professional lives.*	

course and environmental field sampling certificate	*3.Promote greater interdisciplinary teaching and develop innovative combinations across academic departments.*	
Expand marketing efforts -The department will collaborate with Marketing to increase our social media presence and other initiatives to reach perspective students, community partners, and alumni.	**5.6** *Adopt a more coordinated, collaborative approach to internal communications and external marketing, and proactively engage members of the University community as proud brand ambassadors.*	x

B. Departmental Accomplishments and Reflection:

Take this section to reflect on--

1. *22-23 Accomplishments not captured above*
2. *Initiatives that you may be considering for 23-24 academic year that you did not already capture above*

   In addition to the curriculum cross-walking exercise mentioned above, faculty in the department will re-evaluate the learning outcomes for the curriculum and discuss ways to scaffold skill development across courses.

3. *Any other thoughts or information that you would like to share*

Environmental and Earth Science Curriculum and Assessment

I. Catalog description of major requirements

A BS or BA in Environmental and Earth Science require at least 36 credit hours. Required courses include:

Core requirements (27 credits):

GEOG 1000 - Earth Systems Science 3 cr. Or ENSC 1000 - Introduction to Environmental Science 3 cr.
GEOG 2100 - Geology 3 cr.
GEOG 2400 - Introduction to Geospatial Technologies 3 cr. Or GEOG 3120 - Computer Cartography 3 cr.
GEOG 2500 - Oceanography 3 cr.
GEOG 3110 - Climatology 3 cr.
GEOG 4000 - Geographic Information System 3 cr. Or GEOG4002 GIS II or GEOG 4001 WebGIS
GEOG 4200 - Geomorphology 3 cr.
GEOG 4500 - Remote Sensing of the Environment 3 cr.
GEOG 4600 - Environmental Hydrogeology 3 cr.

An additional three courses chosen from (9 credits):
BIOL 1900 - General Biology II 4 cr. Or BIOL 2100 - Flora of New England 3 cr. Or BIOL 3100 - Conservation Biology 3 cr. or BIOL 3102 - Marine Biology 3 cr.
ENSC 2000 - Field Techniques in Environmental Science I 3 cr.
GEOG 2056 - Climate Change and Human History 3 cr.
GEOG 2200 - Meteorology 3 cr.
GEOG 2800 - Map Use 3 cr.
GEOG 3270 - Common Rocks and Minerals 3 cr.
GEOG 4220 - Structural Geology 3 cr.
GEOG 4700 - Geographic Perspectives on Conservation 3 cr.
GEOG 4900 - Independent Study in Geography 1, 2, 3 cr.
GEOG 4940 - Internship in Geography 3 cr. * or GEOG 4950 - Internship in Geography 6 cr. * or GEOG 4960 - Internship in Geography 12 cr. *
*(max 9 cr of internship to apply toward major)

Required cognate courses (27 cr): (to be taken as part of Liberal Arts and Sciences distribution and free electives):
BIOL 2300 - Ecology 4 cr.
CHEM 1300 - General Chemistry I 4 cr.
CHEM 1400 - General Chemistry II 4 cr.
MATH 1700 - Applied Statistics 3 cr.
MATH 1300 - Precalculus 4 cr. or MATH 2300 - Calculus I 4 cr.
PHYS 2300 - General Physics I 4 cr. or PHYS 2600 - Calculus-Based Physics I 4 cr.
PHYS 2400 - General Physics II 4 cr. or PHYS 2700 - Calculus-Based Physics II 4 cr.

II. Assessment Plan

Students who complete a major in Environmental and Earth Science will demonstrate a scientific understanding of how the Earth operates as a system and how humans interact with their environment. They will be able to distinguish between science and non-science, back up arguments with quantitative evidence, communicate their ideas effectively, and explain the necessity and characteristics of an interdisciplinary approach to solving environmental problems.

Environmental and earth science students will:

- communicate scientific information through written, oral, and graphical expression with clarity, logical organization, and use of scientific evidence to support their ideas.
- use the scientific process, including experimental design, analysis and critical evaluation of information, and integration of evidence from relevant sources, in the context of environmental investigations.
- discuss the structure and composition of Earth's interior, surface, and atmosphere, and explain what it means to consider Earth as a system.
- apply an interdisciplinary approach to analyze and propose solutions to environmental science problems.
- describe the complex interactions between humans and their environment, including geological hazards, air and water pollution, global environmental issues, and use and conservation of Earth's resources.

1. Students will communicate scientific information through written, oral, and graphical expression with clarity, logical organization, and use of scientific evidence to support their ideas.

1.1. Information literacy: locate, evaluate, and use relevant information effectively.
1.2. Written communication
1.3. Oral communication
1.4. Graphical/visual

2. Students will use the scientific process, including experimental design, analysis and critical evaluation of information, and integration of evidence from relevant sources, in the context of environmental investigations.

2.1. Gather, organize, interpret, and report scientific data in the context of environmental and earth science investigations.
2.2. Critically and logically analyze competing ideas, and distinguish between scientific and non-scientific approaches to solving problems.
2.3. Use common software (e.g., Excel) to organize and graphically present data.
2.4. Conduct spatial analysis in a GIS environment
2.5. Analyze an environmental issue using and processing remotely acquired imagery
2.6. Describe ethical principles related to scientific inquiry and use of Earth's resources.

3. Students will discuss the structure and composition of Earth's interior, surface, and atmosphere, and explain what it means to consider Earth as a system.

3.1. Describe the structure and composition of Earth's interior, surface (lithosphere, hydrosphere), and atmosphere
3.2. Identify interactions among lithosphere, atmosphere, hydrosphere, and biosphere
3.3. Illustrate and describe energy transfer and element cycling in the Earth system, such as Earth's energy budget, atmospheric circulation, ocean circulation, and the carbon cycle.
3.4. Discuss constructional forces that have shaped Earth's surface (e.g., plate tectonics), theories and evidence of crustal movements, and the effects of crustal movements on Earth's landscape; erosional-depositional processes that change the earth's surface (e.g., weathering, erosion); and describe processes by which water moves on, above, and beneath Earth's surface
3.5 describe Earth's physical evolution through geologic time

4. Students will apply an interdisciplinary approach to analyze and propose solutions to environmental science problems.

4.1. Integrate principles of earth science, physics, chemistry, and biology to answer geoscience questions.
4.2. Apply mathematical principles to quantitatively interpret geoscience data.

5. Describe the complex interactions between humans and their environment, including geological hazards, air and water pollution, global environmental issues, and use and conservation of Earth's resources.

5.1. Discuss society's dependence on Earth resources, such as mineral, rock resources, soil, and water resources; fossil fuels.

5.2. Explain natural hazards related to earth system processes.

5.3. Evaluate the effect of human activity on Earth's natural processes (e.g., global warming, ozone depletion, air pollution, water pollution).

The curriculum to achieve these objectives is as follows:

To gain content knowledge in the **physical environment**, students will take six courses (18 credits):
GEOG1000 *Earth Systems Science,* **OR** ENVS1000 *Introduction to Environmental Science* (3) OR GEOG2003 *Environmental Geology*
GEOG2100 *Geology* (3)
GEOG2500 *Oceanography* (3)
GEOG3110 *Climatology* (3)
GEOG4200 *Geomorphology* (3)
GEOG4600 *Environmental Hydrogeology*

To develop skills in **environmental spatial analysis**, students will take three courses (9 credits)
GEOG2400 *Introduction to Geospatial Technologies* OR GEOG3120 *Computer Cartography* (3)
GEOG4000 *GIS* (3)
GEOG4500 *Remote Sensing of the Environment* (3)

To understand **environmental interactions and applications** – students choose three courses (9 credits) from the following:
GEOG2200 *Meteorology*
GEOG2056 *Climate Change and Human History*
GEOG4220 *Structural Geology*
GEOG4700 *Geographic Perspectives on Conservation*
GEOG4900 Independent Study in Geo
GEOG4940/50/60 Internship in Geo
BIOL2100 *Flora of New England* OR BIOL3100 *Conservation Biology* OR BIOL3102 *Marine Biology*
ENSC2000 *Field Techniques in Environmental Science*
ENSC4050 *Internship in Environmental Science*

Required cognate courses allow students to integrate knowledge from various fields to address environmental problems:
Physics I and II
General Chemistry I and II
MATH1700
MATH1300 or 2300
BIOL2300 *Ecology*

Assessment plan, continued: Curriculum map, aligning outcomes with required and elective courses**.**

Courses-->	1000 *OR*	2003	2100	2400	2500	3110	400X	4200	4500	4600		2056	2200	4220	4700	4900
SLO	EES	Evn Geo	Geol	Geospatial	Ocean	Climo	GIS	Geomorph	Rem Sens	Hydro		CCHH	Meteorolog	structural	Log Pers Co	Internship
1. Students will communicate scientific information through written, oral, and graphical expression with clarity, logical organization, and use of scientific evidence to support their ideas.																
1.1. Information literacy						x						x				
1.2. written communication			x		x	x		x		x		x				x
1.3. oral communication						x	x	x	x	x					x	x
1.4. graph/visual				x	x	x	x	x	x	x			x			
2. Students will use the scientific process, including experimental design, analysis and critical evaluation of information, and integration of evidence from relevant sources, in the context of environmental investigations.																
2.1. Gather, organize, interpret, and report scientific data in the context of environmental and earth science investigations				x	x		x	x	x	x			x			x
2.2. Critically and logically analyze competing ideas, and distinguish between scientific and non-scientific approaches to solving problems																
2.3. Use common software (e.g., Excel) to organize and graphically present data					x	x							x			
2.4. Conduct spatial analysis in a GIS environment							x									
2.5. Analyze an environmental issue using and processing remotely acquired imagery									x							
2.6. Describe ethical principles related to scientific inquiry and use of Earth's resources.															x	
3. Students will discuss the structure and composition of Earth's interior, surface, and atmosphere, and explain what it means to consider Earth as a system.																
3.1. Describe the structure and composition of Earth's interior, surface (lithosphere, hydrosphere), and atmosphere.	x	x	x		x	x		x		x			x			varies
3.2. Identify interactions among lithosphere, atmosphere, hydrosphere, and biosphere	x	x			x	x							x		x	
3.3. Illustrate and describe energy transfer and element cycling in the Earth system, such as Earth's energy budget, atmospheric circulation, ocean circulation, and the carbon cycle.	x	x			x	x							x			
3.4. Discuss constructional forces that have shaped Earth's surface (e.g., plate tectonics), theories and evidence of crustal movements, and the effects of crustal movements on Earth's landscape; erosional-depositional processes that change the earth's surface (e.g., weathering, erosion); and describe processes by which water moves on, above, and beneath Earth's surface.	x	x	x		x			x		x						
3.5. describe Earth's physical evolution through geologic time						x										
4. Students will apply an interdisciplinary approach to analyze and propose solutions to environmental science problems.																
4.1. Integrate principles of earth science, physics, chemistry, and biology to answer geoscience questions.		x				x		x	x	x					x	
4.2. Apply mathematical principles to quantitatively interpret geoscience data.	x	x	x	x	x	x	x	x	x	x			x		x	
5. Describe the complex interactions between humans and their environment, including geological hazards, air and water pollution, global environmental issues, and use and conservation of Earth's resources.																
5.1. Discuss society's dependence on Earth resources, such as mineral, rock resources, soil, and water resources; fossil fuels.		x								x					x	
5.2. Explain natural hazards related to earth system processes		x	x							x			x			
5.3. Evaluate the effect of human activity on Earth's natural processes (e.g., global warming, ozone depletion, air pollution, water pollution)	x	x			x	x						x	x		x	

Assessment plan, continued: Assessment process

PLO #	PLO	Frequency of assessment	Assessment tool	Process (who performs assessment, analyzes data)
1.	Students will communicate scientific information through written, oral, and graphical expression with clarity, logical organization, and use of scientific evidence to support their ideas.	Annual	Manuscripts Presentations Student-created graphs Student-created maps	Instructor uses rubric to assess
2.	Students will use the scientific process, including experimental design, analysis and critical evaluation of information, and integration of evidence from relevant sources, in the context of environmental investigations.	Every 2-3y	Lab reports	Instructor
3.	Students will discuss the structure and composition of Earth's interior, surface, and atmosphere, and explain what it means to consider Earth as a system.	Annual	Exam question in relevant course	Instructor grades question
4.	Students will apply an interdisciplinary approach to analyze and propose solutions to environmental science problems.	Every 2-3y	Exam question in relevant course; Paper	Instructor grades question/essay
5.	Students will describe the complex interactions between humans and their environment, including geological hazards, air and water pollution, global environmental issues, and use and conservation of Earth's resources.	Every 2-3y	Exam question in relevant course; Position paper	Instructor grades question/essay

Earth and Geographic Sciences Action Plan in Table Format

Specific area where improvement is needed	Evidence to support the recommended change	Person(s) responsible for implementing the change	Timeline for implementation	Resources needed	Assessment Plan	Progress made AY21	Progress made AY22	Progress made AY23
Enrollments	Enrollments, while improving, remain below target	All faculty	Begin AY21	May require small but undetermined amount of funding	Increased enrollments	Attended open houses and FFDs.	Attended open houses and FFDs. Collaboration with Nursing and Health Professions advising to recruit PHS students.	Attended open houses and FFDs. Collaboration with Nursing and Health Professions advising to recruit PHS students. Articulation agreement with MWCC.
Curriculum and assessment	New gen ed and associated assessment; Gaps in major courses; skill development; internship assessment	Geo faculty	AY21 – Overall discussion; gen ed proposals and assessment plan AY22 – add/modify major courses as needed AY22-23 – discuss internship assessment AY24 - evaluate	None	Addition of key courses to curriculum; gen ed designations for intro courses; continued assessment of skills; assessment plan for gen ed outcomes and internships	New gen ed designations for all gen ed lab courses and introductory geospatial courses	New gen ed designations for social geography courses; Applied for AIF to obtain course release for internship/HIP work	Added new courses, modified curricula of each major. Reid Parsons completed work on expanding IHIP assess and assessment.
Capstone experience	No required capstone	Geo faculty	AY21 – planning	Course release to build	Addition of capstone		Applied for AIF to obtain course release	Reid Parsons completed APR to develop learning

			AY22 – pilot of course-based capstone; identify earth science internships AY23 - evaluate	internships	experience to curriculum		for internship/HIP work	outcomes for IHIPs, develop materials for students in order to expand access. Piloted course-based research in required upper level EES course.
Strengthen community	Limited sustained opportunities for student extracurricular engagement	All faculty	AY21 – planning AY22 – at least three events AY23 – monthly events	Not yet identified	Number of planned departmental events; attendance at said events		One hike, one clean-up (with sustainability committee), three alum events (Tristan and Sam job talk; Dorian internship and jobs; Tallie and Caroline, grad school)	
Marketing	Enrollments	All faculty	1-2y: develop coherence across programs 3-5y: Departmental newsletter					Discussions about newsletter vs social media
Outreach -on campus -to local high schools -to broader community	Enrollments/department recognition	All faculty	1-2y: planning 3-5y: implementation 5-7y: develop advisory board	Small amount of funding may be requested to support outreach efforts	Increased outreach activities, ideally translating into increased enrollments			Discussions about potential advisory board members.
Participation in early college program	Increase enrollment in courses, possible recruitment	All faculty	1-2y		More early college students in courses		early college GEOG1000 Summer 22	

Transfer friendly curriculum/ Articulation agreements	Increase enrollments	Faculty develop 2yr plans; Chair to work with Heather Thomas	1-2y		Establishment of 2 yr plan; increase articulation agreements	changes to PHS major that are more transfer friendly		Developed articulation agreement with MWCC for Allied Health to PHS pathway.
Curriculum alignment -Add technology objective -GST sequencing and mapping competencies	Align curriculum with learning outcomes	Geo faculty	1-2y		Technology objective added; GST curriculum map			
Experiential learning -study abroad -capstone -field course -certificates	Expand student opportunities	Geo faculty	1-2y: planning 3-5y: implementation	Funding for 'scouting trips' to expand study abroad (or domestically); acquire relevant equipment	Increase offerings of experiential learning		Study abroad planning for AY23; discussion of GIS certificate	Study abroad offered Spring 2023 Global Health Study Abroad added to curriculum; to be offered Spring 2024 Discussions regarding field course. Piloted course-based research project for upper level course EES.
Departmental Collaborations	Increase course enrollments	All faculty	1-2y: ETech 3-5y: Bio/Chem		Expansion of programs, increased enrollments of courses		Geoinformatics; Data science discussions; Digital Media Innovation;	Collaborated on Data Analytics minor, which went through AUC

							GIS-CJ added as a data analysis option for CJ major	
Personnel	Additional faculty line in geography needed; technician support	Chair to request; all faculty assist in hiring process	Annual request	Costs associated with faculty hire	New geographer joins the department		Technician responsibilities adjusted to provide support to geospatial needs	
Equipment acquisition	Student access to equipment that better prepares them for graduate school and employment; expand opportunities for research	Chair to request; faculty identify equipment needs	1-2y, pending budgetary resources	Costs of equipment acquisition and upkeep	Acquisition of relevant equipment		GPS units for study abroad; equipment for soil sampling	Purchased equipment for field work; Accessories for the drone. Began operating the drone.