**PERSONNEL DATA SHEET (PDS)**

Cal Poly Humboldt.

Name: [redacted] Date: [redacted]

At what rank were you first employed at Humboldt? Assistant Professor

Date of initial appointment: [redacted] Present rank: Assistant Professor

Effective date of appointment or promotion to present rank: [redacted]

Have you been awarded tenure? Yes ___ No X

Terminal degree received? Yes X No ___

If No, Expected completion date: ___

***OR*** Date equivalency or compensatory strengths approved: ___

## I. EDUCATION AND EMPLOYMENT BACKGROUND

a. Education

| Name of Institution/Location | Dates Attended | Major Emphasis | Credits Earned | Degree and Date |
|---|---|---|---|---|
| [redacted] College | 2009-2014 | [redacted] | 57 | PhD, [redacted] |
| [redacted] University | 1999-2002 | [redacted] | 95 | MS, [redacted] |
| [redacted] College | 1994-1998 | [redacted] | 133 | BA, [redacted] |

b. Employment

| Employer (Institution) or Organization/Location | Nature of Employment | Position/Rank | Dates |
|---|---|---|---|
| Humboldt State University | Teaching, research | Assistant Professor | 08/17-pres |
| [redacted] University | Research | Postdoctoral Researcher | 07/2014-06/2017 |
| [redacted] | [redacted] science | Physical science technician | 01/2006-08/2009 |
| [redacted] | [redacted] science | Physical science technician | 10/2003-05/2005 |

## II. EFFECTIVENESS

### a. Teaching Effectiveness

1. Courses taught at Humboldt State University AY 17-22, including instructor rating based on student evaluations and percent responses of student evaluations. Note that GEOL 490/492/499 and GEOL 690/699 courses are not formally evaluated. *Also note that WTUs for GEOL 475 (beyond the 15 WTU) were counted as summer salary.

| Course | Title | Format | Total WTU | Enrollment | Instructor rating | % Evaluation response |
|---|---|---|---|---|---|---|
| **Fall 2022** | | | | | | |
| GEOL 332 | Sedimentary Geology Lecture | Lecture | 3 | 14 | N/A | N/A |
| GEOL 332L | Sedimentary Geology Lab (41103) | Lab | 2 | 8 | N/A | N/A |
| GEOL 332L | Sedimentary Geology Lab (41104) | Lab | 2 | 6 | N/A | N/A |
| GEOL 455 | Colloquium | Lecture | 1.3 | 11 | N/A | N/A |
| GEOL 452/552 | Glacial and Periglacial Processes | Lecture | 3 | 13 | N/A | N/A |
| GEOL 490 | Senior Thesis (Supervision) | Supervision | 0.33 | 1 | N/A | N/A |
| GEOL 492 | Senior Thesis Project (Supervision) | Supervision | 0.33 | 1 | N/A | N/A |
| GEOL 690 | MS Thesis (Supervision) | Supervision | 1 | 2 | N/A | N/A |
| GEOL 699 | MS Independent Study (Supervision) | Supervision | 1 | 2 | N/A | N/A |
| GEOL X693 | Graduate Continuous Enrollment (Supervision) | Supervision | 0 | 1 | N/A | N/A |
| Collateral | | | 3 | | | |
| | | **Total** | **16.96** | | | |
| **Spring 2022** | | | | | | |
| GEOL 210 | Earth Systems History Lecture | Lecture | 3 | 15 | 4.9 | 73% |
| GEOL 553 | Quaternary Stratigraphy Lecture | Lecture | 3 | 12 | 4.9 | 75% |
| GEOL 553L | Quaternary Stratigraphy Lab | Lab | 2 | 12 | 4.9 | 75% |
| GEOL 499 | Directed Study (Supervision) | Supervision | 0.33 | 1 | N/A | N/A |
| GEOL 690 | MS Thesis (Supervision) | Supervision | 1 | 2 | N/A | N/A |
| GEOL 699 | MS Independent Study (Supervision) | Supervision | 0.5 | 1 | N/A | N/A |
| N/A | SPF Incentives Grant (Teaching release) | | 3 | N/A | N/A | N/A |
| Collateral | | | 3 | | | |
| | | **Total** | **15.83** | | | |
| **Fall 2021** | | | | | | |
| GEOL 109 | General Geology Lecture (Online synchronous) | Lecture | 3 | 36 | 4.6 | 69% |
| GEOL 332 | Sedimentary Geology Lecture (Online synchronous) | Lecture | 3 | 26 | 4.9 | 81% |
| GEOL 332L | Sedimentary Geology Lab (41136) | Lab | 2 | 11 | 4.9 | 91% |
| GEOL 332L | Sedimentary Geology Lab (41137) | Lab | 2 | 15 | 4.9 | 80% |
| GEOL 399 | Supplemental Work in Geology Lab | | 0.5 | 1 | N/A | N/A |
| GEOL 490 | Senior Thesis (Supervision) | Supervision | 0.33 | 1 | N/A | N/A |
| GEOL 499 | Directed Study (Supervision) | Supervision | 0.33 | 1 | N/A | N/A |
| GEOL 690 | MS Thesis (Supervision) | Supervision | 0.5 | 1 | N/A | N/A |
| GEOL 699 | MS Independent Study (Supervision) | Supervision | 0.5 | 1 | N/A | N/A |
| Collateral | | | 3 | | | |
| | | **Total** | **15.16** | | | |

| Course | Title | Format | Total WTU | Enrollment | Instructor rating | % Evaluation response |
|---|---|---|---|---|---|---|
| **Spring 2021** | | | | | | |
| GEOL 109 | General Geology (Online synchronous) | Lecture | 3 | 27 | 4.7 | 56% |
| GEOL 109L | General Geology Lab (22339) (Online synchronous) | Lab | 2 | 20 | 4.8 | 60% |
| GEOL 109L | General Geology Lab (22351) (Online synchronous) | Lab | 2 | 7 | 5.0 | 14% |
| GEOL 210 | Earth Systems History (Online synchronous) | Lecture | 3 | 21 | 4.7 | 67% |
| GEOL 475 | Geology Field Camp (Online synchronous & in person) | Lab | 4* | 17 | N/A | N/A |
| GEOL 492 | Senior Thesis Project (Supervision) | Supervision | 0.33 | 1 | N/A | N/A |
| GEOL 690 | MS Thesis (Supervision) | Supervision | 0.5 | 1 | N/A | N/A |
| GEOL 699 | MS Independent Study (Supervision) | Supervision | 0.5 | 1 | N/A | N/A |
| Collateral | | | 3 | | | |
| | | **Total** | **18.33*** | | | |
| **Fall 2020** | | | | | | |
| GEOL 332 | Sedimentary Geology (Online synchronous) | Lecture | 3 | 22 | 4.9 | 95% |
| GEOL 332L | Sedimentary Geology Lab (41479) (Online synchronous) | Lab | 2 | 9 | 5.0 | 89% |
| GEOL 332L | Sedimentary Geology Lab (41480) (Online synchronous) | Lab | 2 | 13 | 4.9 | 100% |
| GEOL 490 | Senior Thesis (Supervision) | Supervision | 0.33 | 1 | N/A | N/A |
| GEOL 531 | Advanced Physical Geology – Glacial Geology (Online synchronous) | Lecture | 3 | 10 | 4.8 | 100% |
| GEOL 690 | MS Thesis (Supervision) | Supervision | 0.5 | 1 | N/A | N/A |
| GEOL 699 | MS Independent Study (Supervision) | Supervision | 0.5 | 1 | N/A | N/A |
| GEOL 700 | In-Service Professional Development in Geology (Online synchronous) | Lecture | 1 | 8 | 5.0 | 63% |
| Collateral | | | 3 | | | |
| | | **Total** | **15.33** | | | |
| **Spring 2020** | | | | | | |
| GEOL 109 | General Geology (Second half - Online asynchronous) | Lecture | 3 | 33 | 4.8 | 46% |
| GEOL 109L | General Geology Lab (22988) (Second half -Online asynchronous) | Lab | 2 | 14 | 5.0 | 43% |
| GEOL 109L | General Geology Lab (23050) (Second half -Online asynchronous) | Lab | 2 | 19 | 4.9 | 47% |
| GEOL 399 | Supplemental Work in Geology (Lab) | Lab | 0.33 | 1 | N/A | N/A |
| GEOL 499 | Directed Study | Lab | 0.33 | 1 | N/A | N/A |
| GEOL 553 | Quaternary Stratigraphy (Second half -Online asynchronous) | Lecture | 3 | 5 | 4.8 | 100% |
| GEOL 553L | Quaternary Stratigraphy Lab (Second half -Online asynchronous) | Lab | 2 | 5 | 4.8 | 100% |
| Collateral | | | 3 | | | |
| | | **Total** | **15.66** | | | |

| Course | Title | Format | Total WTU | Enrollment | Instructor rating | % Evaluation response |
|---|---|---|---|---|---|---|
| **Fall 2019** | | | | | | |
| GEOL 210 | Earth Systems History | Lecture | 3 | 27 | 4.8 | 81% |
| GEOL 332 | Sedimentology | Lecture | 3 | 27 | 4.6 | 96% |
| GEOL 332L | Sedimentology Lab (41557) | Lab | 2 | 9 | 4.9 | 78% |
| GEOL 332L | Sedimentology Lab (41558) | Lab | 2 | 18 | 4.5 | 100% |
| GEOL 499 | Directed Study | Supervision | 0.66 | 2 | N/A | N/A |
| GEOL 700 | Communicating Science | Lecture/field | 1 | 15 | 5.0 | 73% |
| Collateral | | | 3 | | | |
| | | **Total** | **14.66** | | | |
| **Spring 2019** | | | | | | |
| GEOL 109 | General Geology | Lecture | 3 | 45 | 4.9 | 60% |
| GEOL 380 | Special Topics in Geology - Glacial Geology | Lecture | 3 | 14 | 4.8 | 93% |
| GEOL 455 | Geology Colloquium | Seminar | 1.33 | 10 | N/A | N/A |
| GEOL 475 | Geology Field Camp | Field course | 4* | 15 | 4.8 | 87% |
| GEOL 492 | Senior Thesis Project | Supervision | 0.33 | 1 | N/A | N/A |
| Collateral | | | 3 | | | |
| Assigned Time | Probationary TT Faculty WTU Reduction | | 3 | | | |
| | | **Total** | **17.66** | | | |
| **Fall 2018** | | | | | | |
| GEOL 210 | Earth Systems History | Lecture | 3 | 32 | 4.6 | 59% |
| GEOL 332 | Sedimentology | Lecture | 3 | 20 | 4.7 | 75% |
| GEOL 332L | Sedimentology Lab (44618) | Lab | 2 | 12 | 4.9 | 83% |
| GEOL 332L | Sedimentology Lab (44619) | Lab | 2 | 8 | 4.9 | 63% |
| GEOL 490 | Senior Thesis | Supervision | 0.33 | 1 | N/A | N/A |
| Collateral | | | 3 | | | |
| Assigned Time | Probationary TT Faculty WTU Reduction | | 3 | | | |
| | | **Total** | **16.33** | | | |
| **Spring 2018** | | | | | | |
| GEOL 109 | General Geology | Lecture | 3 | 50 | 4.6 | 78% |
| GEOL 109L | General Geology (23821) | Lab | 2 | 25 | 4.6 | 68% |
| GEOL 109L | General Geology (23823) | Lab | 2 | 25 | 4.8 | 84% |
| GEOL 435 | Geologic Field Methods II (co-taught with Brandon Browne) | Lecture | 1.5 | 29 | 4.6 | 72% |
| Collateral | | | 3 | | | |
| Assigned Time | Probationary TT Faculty WTU Reduction | | 3 | | | |
| | | **Total** | **14.5** | | | |
| **Fall 2017** | | | | | | |
| GEOL 210 | Earth Systems History | Lecture | 3 | 26 | 4.5 | 58% |
| GEOL 332 | Sedimentology | Lecture | 3 | 21 | 4.6 | 81% |
| GEOL 332L | Sedimentology Lab (44545) | Lab | 2 | 12 | 4.9 | 83% |
| GEOL 332L | Sedimentology Lab (44546) | Lab | 2 | 9 | 4.3 | 89% |
| Collateral | | | 3 | | | |
| Assigned Time | Probationary TT Faculty WTU Reduction | | 3 | | | |
| | | **Total** | **16** | | | |

2. Teaching Philosophy

During my first five years as an Assistant Professor at Cal Poly Humboldt, I have focused on 3 main teaching goals i) to create an active, inclusive and equitable learning environment, ii) to emphasize critical thinking skills, and iii) to focus on place-based learning and use examples from scientific studies in the curriculum.

i) Create an active, inclusive and equitable learning environment

The geosciences are well suited for creating an active learning environment, naturally lending themselves to field-based courses and interactive lab exercises. Findings from the Discipline Based Education Research: Understanding and Improving Learning in Undergraduate Science and Engineering report (2012) show that *"…field courses can positively affect the attitudes, career choices, and lower- and higher-order cognitive skills of student participants…"* (p. 135). Therefore, I seek to include field experiences and interactive exercises into classes whenever possible. For example, I have included field trips in many of my classes as a way for students to actively learn about their surroundings. To create an inclusive environment, I employ techniques such as "Think-Pair-Share" where students think individually about a challenging question, then pair up with a classmate(s) and share and discuss their ideas. This technique creates an interactive experience. It also includes quieter students in the discussion, who may not feel comfortable speaking up in class. After attending the "Creating Equity in the Classroom" session during Spring 2020 professional development days (Table 2), I was made more aware of issues of equity in the classroom and I was inspired to do more to create equitable learning environment in my courses. Since then I have made more efforts to create an equitable learning environment by: 1) surveying students on the first day of class about commitments outside of school (e.g. full-time jobs, single parents) so that I can better support them, 2) finding free and/or inexpensive texts and class resources so that my courses are not a financial burden to them, and 3) using the 'Muddiest Point' surveys to illicit questions and feedback from students who may be uncomfortable asking questions in the classroom (see GEOL 332 course description below). I am committed to creating an inclusive and equitable classroom and will continue to participate in future opportunities to learn how I further equity and inclusion in the classroom.

ii) Emphasize critical thinking skills

The geosciences are an ideal subject for teaching critical thinking skills. For example, in the current political climate with the abundance of 'fake news' and incorrect information, being able to critically pull apart arguments is a skill that will serve them well both in and out of the geosciences. In the geologic context, students can also use their knowledge of Earth processes and critical thinking skills to analyze arguments made by climate change deniers: students can learn how to ask critical questions, detect inconsistencies in reasoning, find reliable information, understand the logical connections between ideas, and finally make their own informed decisions.

iii) Use examples from scientific studies & place-based learning in the curriculum

As a geologist, I have a unique view of the landscape and the processes that have shaped it. Using the local geologic setting for place-based learning encourages students to think about their surroundings in the fourth dimension of time, something many of them have never considered. For example, I introduce General Geology (GEOL 109) students to the tectonics of the region by showing them the thrust faults that dissect downtown Arcata, which often changes the way they perceive their everyday surroundings. Additionally, my experience is that when students only learn science via textbooks, they think that all science is neat and tidy and that all scientific questions have been answered. To further educate students about scientific process and to foster student curiosity about the subject, I have tried to introduce as much 'real' science and data into my courses as possible. In introductory courses (e.g. GEOL 109), we calculate the discharge of Mill Creek in Trinidad and then compare it to the Mad River discharge on the same day. In my sophomore-level course, Earth Systems History (GEOL 210), I point out some of the scientific questions over Earth's history that are still unknown or highly debated, such as the cause of the dinosaur extinction- an event that they think has been 'solved'. In the graduate-

level Quaternary Stratigraphy (GEOL 553) course, I created eight new labs that were based totally on published data and a final project where students collected sediment cores from the Arcata Marsh and then analyzed them. By using real data and scientific studies in my classes, I am able to introduce students to the 'real world' of science, where data may be messy and results are hard to interpret. This gives them experience working with real data and firsthand experience with the scientific method, which they will likely use in their career once they leave Cal Poly Humboldt.

***Reference***

Singer, S.R. and Nielsen, N.R. (*Eds*.), 2012. Discipline-based Education Research: Understanding and Improving Learning in Undergraduate Science and Engineering. National Research Council, Washington D.C.

3. Evaluation of RTP Standards for Teaching (Department of Geology Personnel Document, see Section 3)

The Department Chair and IUPC will give attention to qualitative and quantitative measures of teaching effectiveness. Ratings in the teaching effectiveness category reflect not only classroom performance, but also advising activities and pedagogical activities that pertain to improving the delivery of geology courses. Evaluations of teaching effectiveness shall be based primarily on written statements from colleagues within the Geology Department and/or University colleagues, as well as student evaluations. All candidates for tenure and promotion must earn an "excellent" rating in Teaching. To do so, the faculty member should meet all conditions listed under "Essential" and have an accumulation of "Indicators of Excellence." The accumulation will not reflect a one-time achievement but, rather, a prolonged accumulation of success over the review period.

**Table 1. RTP Standards for Teaching – Assistant Professor to Associate Professor**

| Category I – Essential | Category II – Indicators of Excellence |
|---|---|
| • Effective teaching as indicated by course materials, including syllabi that clearly communicate course objectives, policies and grading criteria made easily accessible to students as well as (but not limited to) homework, exams, laboratory-based learning, and field-based learning | • Consistently earning high (generally a score of 4 or greater for the majority of questions) student evaluation scores across a broad range of levels including introductory, General Education, and specialized courses |
| • Include student evaluations of courses | • Regular supervision of quality student research, including senior theses, graduate theses, and independent study projects by students with different academic skills and academic background |
| • Collegial evaluations (letters) of courses that span the review period from departmental colleagues who have routinely made classroom observations and other colleagues where appropriate | • Assuming difficult teaching assignments and achieving positive results. The challenge to the instructor, for example, may arise from the subject matter itself, a significant field-based component, the instructor's lack of familiarity with the subject matter, the audience involved, a change in the modality of the course (e.g., HyFlex, Online), or the number of different preparations |
| • Letters from recent graduates or former students | • Reflecting on their own intersectional identity, positionality, and power and the effects of these factors on student learning |
| • Evidence of continually striving towards the creation of a welcoming and inclusive learning environment in the class and field, where students from diverse backgrounds and cultures are treated equitably, and all students have equal opportunity to succeed. | • Collegial letters documenting a teaching style that allows students time to process and answer questions, listens to student comments and questions using supporting/reflective listening skills, and encourages responses requiring reasoning |
| • Evidence of accessibility to students, including weekly office hours | • Successfully developing and offering new courses that are determined to be needed by either the department or student demands. |
| •Active engagement in curriculum development and assessment that promotes alignment of department curricular offerings with both the departmental learning objectives and the evolving needs of our academic discipline | • Successfully expanding teaching approaches by introducing projects that go beyond the typical homework assignment; attending meetings or seminars to enhance or expand teaching styles, successfully implementing those teaching styles in the classroom |
| •Appropriate preparation for all class meetings | • Receiving a notable teaching award |
| • Dedication to and effectiveness in teaching across a broad range of levels including introductory, General Education, and specialized courses | • Directing successful independent or directed study courses, as indicated by the quality of the completed product of the students' work while taking the course |
| • Advising and mentoring students, supervising teaching/student assistants | • Maintaining/updating a course through related readings, scholarship, and/or travel |
| | • Preparing high-quality teaching materials such as online content, software, laboratory exercises, field-based exercises or class--related websites |
| | • Incorporating outreach within course curriculum where students are given opportunities to be stewards of the community |

Based on the Geology Department's RTP Standards for Teaching, **I have achieved an Excellent rating.** I have met all Category I conditions and all but one Category II conditions. (Stars indicate completed or achieved items.)

4. Description of Courses Taught

**General Geology (GEOL 109).** (Taught Springs 2018, 2019, 2020, 2021 and Fall 2021)
Course Description: Physical geology. Origin and constitution of the Earth, internal and external processes that determine crustal and surficial features, and methods in investigating and interpreting earth history. Offered every semester.

How does this course fit into the curriculum of the university?
This is the introductory class that all geology majors (BS and BA) and minors are required to take. It is a pre-requisite for all courses in the major. Additionally, many Biology, Forestry, and Fisheries majors take the class to fulfill their lower level GE requirements.

How is your teaching philosophy exemplified by this course?
***Active, inclusive and equitable learning environment***
My biggest goal with this course is to get students excited about geology and for them to begin to understand the geology that surrounds them. The best compliment I can receive from students in this course is when they become curious about their regional geology. For example, students rushing to Van Matre Hall after a local earthquake to see the P- and S-waves recorded on the seismograph or taking their roommates to Trinidad Beach in their free time to show them the sea stacks and explain their geologic origin. I've come to realize that in order for them to get excited about geology, I need to come to class every day excited about the material and my lectures need to be dynamic to keep them engaged. My lectures are composed of PowerPoint slides with clear, bulleted points and images/diagrams, diagrams drawn on the board, videos of Earth processes such as earthquakes and volcanic eruptions, and hands-on, in-class exercises such using strands of spaghetti to demonstrate brittle and ductile fracture as an analog for rock fracture during an earthquak. Additionally, every class we do an in-class activity that keeps students engaged during the lecture as well as reinforcing new concepts that were introduced in lecture that day. These in-class activities then also serve as good supplemental study guide for exams.

To create a more equitable and inclusive learning environment in this larger lecture (usually 30-50 students), I learn all of the students' names within the first two weeks of the semester. This helps me to build an immediate relationship with the students, encourages class participation and also aids in classroom management. To learn all of the students' names and to begin to get to know them, I ask students to fill out a pre-class survey on the first day of class. The survey includes the following:

- Name
- Pronouns
- What are you excited to learn about in this course?
- Preferred name/nickname
- Major/year
- What are you concerns about this course?
- What is your study environment like?
- What commitments do you have outside the classroom?

In Spring 2020, after attending a training on 'Equity in the Classroom', I added the final question about commitments outside of the classroom and it helped me understand what students' responsibilities were outside of school and therefore helped me facilitate more equity in my courses. For example, one student told me she was a single mother and she may have to miss class if her daughter was sick. Another student who was very shy, wrote on the card that she was hearing impaired and would come to office hours to explain further how I could support her (which she did). Additionally, when classes shifted to online in Spring 2020, I asked students 'check-in questions' at the end of their weekly assignments, such as 'What have you learned about yourself through this online learning experience?' and 'What is something positive that occurred this week and/or something new that you learned?'. These questions helped me to gauge how students were navigating online learning and the social

isolation brought about by the COVID-19 pandemic. I continue to use both these pre-class surveys and check-in questions in this course.

***Critical thinking skills***

To help develop students critical thinking skills, I show clips from popular, geology-based movies (e.g. San Andreas, Volcano, The Day After Tomorrow) and ask students to use the knowledge they've gained in the class to note which parts of the clips are accurate geologically, and which are not. Although the students probably remember these exercises as mostly fun, they are actually using their newfound geological knowledge to critically assess the scientific accuracy of the movie clips.

***Place-based learning***

I also use the local geological setting of Cal Poly Humboldt to introduce students to the many geologic processes and events (subduction zones, plate tectonics, earthquakes, tsunamis, beach erosion, dune migration, etc.) that occur in the region. Students in this course have commented that they enjoyed learning about the geologic setting of Humboldt and previous to this course had no idea how the local landscape was shaped by geologic events.

What special pedagogical problems does this course have, and how have you addressed them?

***Low instructor to student ratio in labs***

In Spring 2018 and 2020, I taught both of the lab sections for this course. In 2018 lab sections each had 26 students and in 2020 one lab had 19 students. These higher enrollment numbers in lab sections made it harder for me to help all of the students during lab time. To alleviate this, I tried to include more explicit and detailed instructions in the lab handouts and to encourage students to work together in small groups during lab. Additionally, in 2020, one student was hearing impaired and another was sight-impaired which meant I sometimes had to spend more time with them. The low instructor-to-student ratio was especially prominent during field trips when I was the sole person responsible for student safety and able to answer student questions/clarifications. To alleviate this, I invited upper class geology majors to come assist on some of the field trips. Only one geology major took me up on the offer in spring 2018, but having her along as an informal teaching assistant on a field trip greatly increased the one-on-one time students experienced with a geologist and increased student safety. Additionally, having a geology major along for the field trip acted as a role model for the students. In Spring 2020 (prior to classes moving online), a senior geology major served as an informal teaching assistant in one of the labs to help answer student questions and to help the sight-impaired student. I intend to invite geology majors to future GEOL 109 labs for this purpose.

***Teaching hands-on labs online***

In the latter half of Spring 2020 and in Spring 2021 (when the course was fully online), I had the additional challenge of creating online labs that were engaging and hands on. In Spring 2020, I created new labs and adapted old labs to be fully online. These included virtual field trips using Google Earth and rock and mineral labs using 3-D images that students could manipulate/rotate on their screen to study them in more detail. In Spring 2021, when I had more time to prepare for an online class, I worked with Steve Tillinghast, the Geology Department technician, to send rock and mineral kits to students at the beginning of the semester. We used these kits for several labs and they allowed me to explain the properties of minerals over Zoom, while each student studied their own hand samples in front of them. Students could also work together in Zoom break-out rooms (similar to working together in in-person labs) because they all had their own kits. The feedback about the rock and mineral kits in the student evaluations (and informally) was very positive.

Were there any trends in the student evaluation comments? If so, how have they led (or how will they lead) you to change your approach to this course?

***Overall instructor rating = lecture: range [redacted] ([redacted] average), lab: range [redacted] ([redacted] average) (Section 7B)***

Student comments on the lecture portion of this class were positive and many students have commented in their evaluations on how well-organized the class was and said that it was their favorite class. In 2019, some students asked that I slow down the lecture, which I did in 2020 by drawing more on the board and using less slides. Student comments on the labs were positive and many indicate that the field trips and hands-on activities were most engaging. One constructive comment was to slow down when explaining the first lab, which I have done. Another comment suggested changing the first lab where students create their own map of the geological units and faults in the region because the lab was "tedious". The purpose of the lab is to have students slow down and spend some time looking at the maps while they transfer information onto their own maps. I have since decreased the scope of this lab to a smaller map area to focus on the most important geologic areas of interest. In Fall 2021, when I only taught the online lecture portion of the course (not the in-person lab sections), a few students commented that not all students joined the Zoom break-out rooms during in-class activities. Unfortunately fatigue from online learning was very evident at this point in the pandemic and I couldn't force students to turn on cameras or participate in break-out rooms. I did my best to join as many break-out rooms as I could in the ~10-minute span of the in-class exercise so that I could engage with students directly, but some students chose not to engage. Future iterations of this course will be in-person where engaging students in in-class activities is easier.

**Earth Systems History (GEOL 210)** (Taught Fall 2017, 2018, 2019, Spring 2021, 2022)

Course Description: Evolution of Earth as an integrated system emphasizing the geological, climatological and biological forces that have shaped it, focusing on North America. Topics focus on geologic time scale and deep time, plate tectonic cycles, fossils and history of life, and the natural and anthropogenic climate history of the Earth. Offered every spring semester. (Prior to 2020, offered every fall semester.)

How does this course fit into the curriculum of the university?

I developed this course from scratch in Fall 2017 when it was originally added to our curriculum. It was included into our curriculum for two reasons: 1) it was noted by Cal Poly Humboldt faculty who taught Cal Poly Humboldt's field camp (senior year capstone for BS majors) that Cal Poly Humboldt students did not have a good sense of deep time and the processes that shaped the western U.S., and 2) to align Cal Poly Humboldt's curriculum with California's two-year transfer curriculum (as many transfer students had taken this course prior to coming to Cal Poly Humboldt and were not receiving any credit for it).

How is your teaching philosophy exemplified by this course?

***Inclusive learning environment***

We cover a broad range of topics in GEOL 210 that can be potentially controversial (e.g. evolution, climate change), therefore I strive to create an inclusive environment from the very beginning of the course. On the first day of classes, the students and I create a list of class ground rules together. Students therefore have buy-in to the course from day one. Just like my other courses (e.g. see GEOL 109), I ask students to fill out a brief questionnaire on the first day so I can learn more information about them and how I can support their learning in the course.

What special pedagogical problems does this course have, and how have you addressed them?

***Varying levels of geology majors***

This class is meant as a sophomore level class (taken after General Geology, GEOL 109), but due to recent department curriculum changes and the fact that many geology BS/BA majors are transfer students, several juniors and seniors still take the class. This adds a challenge in that the juniors and seniors can be bored while the material is at an appropriate level for the sophomores in the class. I have addressed this issue by making it clear on

the first day of the course that the course material is aimed at a sophomore-level.

***4.5 billion years of history in 16 weeks***

This course covers Earth's 4.5-billion-year history in one semester which is challenging and so it is a 'highlight reel' of the biggest and most important events in evolution, climate and tectonics. Additionally, there is background material that students need to understand prior to learning about certain events or processes (e.g. students need to learn the basics of isotopes before we discuss how geologists determined the age of the Earth or the theory of evolution before we discuss life on Earth.) To address this, I've modified the curriculum each year to streamline it – removing material that is extraneous and adding material that directly relates to the main topics of the course, while focusing mainly on the Phanerozoic Eon (the last 541 million years) when life has been evolving and where the geologic record is best preserved. Still, it is a lot of information to cover and I'm continually modifying the course to avoid it being a laundry list of events and instead linking one event into the next as a cohesive story.

Were there any trends in the student evaluation comments? If so, how have they led (or how will they lead) you to change your approach to this course?

***Instructor rating = lecture: range [redacted] ([redacted] average) (Section 7B)***

Student evaluations for this course were positive and only a few included constructive criticisms for the course. In Fall 2017 class evaluations, students suggested adding a 4$^{th}$ exam, to lessen the material covered in each exam, which I did starting in Fall 2018. A couple of students suggested that I "tweak" the first part of the course where we learn about Earth processes (plate tectonics, atmospheric circulation, evolution) before we start moving through geologic time. In Fall 2018 I removed a few lectures at the beginning of the course that were not as important as a basis for future material and added more material later in the course when we discuss more recent parts of Earth's history. One student in Fall 2019 suggested I post blank versions of the weekly geologic time quizzes, so they are familiar with the format. After Fall 2019, I removed the weekly geologic quizzes from the curriculum because of a) my concern for students cheating on online quizzes that were based purely on memorization and b) the realization that memorizing the geologic time scale didn't provide a general context for the geologic periods and ages. Since then I have instituted a geologic timeline journal that each student fills-in on a semi-weekly interval over the course of the semester, based on a template that I created for them in Google Slides (see 'GEOL210 Geo timeline journal example' in Supplement A). To give students context for comprehending the vast depth of geologic time, they calculate the percent of Earth's history that that geologic period represents. They then use their class notes to reflect on and fill in information about the climate, tectonics and evolution events of that time period. They are also encouraged to highlight in red font the event in each geologic period that they think is most important. By the end of the semester, all students have created a geologic timeline journal that they can use as a resource in future geology classes.

In the first rendition (Fall 2017) of this course, students gave class presentations on their final project. Based on evaluation comments and a subsequent large class size, I've removed the class presentations (3 class periods) and added more in-class activities (e.g. a 50-min activity based on the controversy surrounding what caused the extinction of the dinosaurs).

I've also changed how I prepare students for exams. In Fall 2018 I had students make their own exam questions as a way to encourage them to start going through the material earlier than the night before the exam. I then would compile these questions and post them online for students to study from. Since there were 200+ questions submitted, it was too time consuming for me to organize and edit the questions before posting for the students. Therefore, starting in Fall 2019, I kept the assignment of having students come up with potential exam questions and answers to encourage them to look at the material ahead of time and once the due date/time had passed, I posted the study guide that I had created. Based on informal feedback, students liked this approach and have told

me that they now use this same method to study for exams in other classes.

**Sedimentary Geology (GEOL 332)** (Taught Fall 2017, 2018, 2019, 2020, 2021, 2022)
Course Description: Identification and interpretation of sedimentary rocks and structures. Application of stratigraphic and dating methods in the earth sciences. Impact of climate and geologic processes on depositional patters and facies analysis. Offered every fall semester.

How does this course fit into the curriculum of the university?
This course is a requirement for both the BA and BS degrees, as well as part of the Geology minor. It is taken by mostly seniors during the fall semester before they graduate. Additionally, since Fall 2019 a handful of Biology MS students and post baccalaureate students have enrolled in the course.

How is your teaching philosophy exemplified by this course?
***Active and inclusive learning environment***
I create an inclusive learning environment in this class by assigning students to field groups during our first field trip during the second week of the semester. This encourages students to work with and meet other students who they haven't met before. I have noticed that often these students will continue to work together during labs, even when lab groups are not assigned. Of the fourteen labs (per semester) in this course, at least three of them are field trips where students collect data and/or practice making observations and interpretations of the stratigraphy. These labs are built on the topics that students learn in lecture and give them hands on experience practicing new skills. For example, there is a field trip to the Mad River where students measure stream velocity and conduct grain size measurements on the sediment in the river channel to determine the largest grainsize the river can currently transport. They then measure grain size of the sediments in the dry river bed to determine the flow velocity that was needed to transport the larger cobbles and boulders. This field trip directly links to lecture material where we construct and use the Hjülstrom diagram that describes grain size transport with fluid velocity.

In Fall 2020, when I first taught this course fully online, I started using a weekly survey called "Muddiest Point" to connect with the students. In these surveys I asked them what was something interesting that they learned in class that week and what were they still confused about (e.g. the muddiest point). Additionally, I'd often ask them additional check-in questions such as: *How was your first week of classes?, What is challenging to you about online learning?, Do you have any concerns about the upcoming midterm exam?,* and in Fall 2021: *We've had two weeks of in person labs this semester, do you have any COVID safety related concerns thus far?* Their responses helped me understand what material they enjoyed the most and where there was shared confusion on topics, especially among students who are shy and often don't ask questions. When there were trends in their responses, I'd start the next lecture answering some of their Muddiest Point questions. Additionally, these surveys helped me develop a rapport with all of the students, understand how students were doing physically, mentally and emotionally and increased the student inclusivity of the course. These regular informal Muddiest Point surveys have now become a regular part of my teaching practice in this course and in many of my other courses.

***Critical thinking skills***
I have included critical thinking skills and place-based learning throughout the curriculum of this course. One of the overall themes of this class is improving student writing skills. In addition to a final paper that they work on throughout the semester, I try to incorporate smaller writing/reading/editing assignments that help students critically evaluate their writing skills and also try to improve their reading skills. Many students have the impression that they can't question any scientific paper they read and so I have them critically assess the science and the writing of numerous papers.

What special pedagogical problems does this course have, and how have you addressed them?

***Some students lack mineral identification skills***

Although GEOL 109 (General Geology) and GEOL 210 (Earth Systems History) are the only prerequisites for this course, students have varying levels of skills needed in this class, especially identifying minerals in a hand sample. This seems particularly to be an issue with students who are taking this as part of their Geology minor where either Earth Materials (GEOL 312) or Sedimentary Geology (GEOL 332) is required. This discrepancy seems to be the most obvious during labs when students are identifying minerals in rock samples or where students need to identify the rock type of pebbles in an outcrop. To try to alleviate this issue, I have paired up students of varying skill levels with each other so that students who have taken or are taking GEOL 312 can help those with less mineral identification experience. Additionally, I display common sedimentary rock forming minerals in the teaching lab so that those with less experience identifying minerals can have labeled examples to work from.

***Small and homogeneous sedimentary rock collection***

Some of the labs in this course focus on sedimentary rock identification. Cal Poly Humboldt's sedimentary rock teaching collection is relatively small and therefore I have to be strategic in which samples I use for 'unknown samples' in the labs. This leaves very few samples to use as 'known samples' for students to use when they are familiarizing themselves with the various sedimentary rocks or structures. In Fall 2019, with the help of Steve Tillinghast, the department technician, I ordered some new teaching specimens. However, the lack of teaching samples is an ongoing issue that will likely take many years of purchasing/trading/collecting rocks to fully alleviate.

Were there any trends in the student evaluation comments? If so, how have they led (or how will they lead) you to change your approach to this course?

***Overall instructor rating = lecture: range [redacted] ([redacted] average), lab: range [redacted] ([redacted] average) (Section 7B)***

Overall student comments on the student evaluations were positive for this course. Students said they were most engaged during field trips, discussing peer-reviewed papers, and when we practiced observation and interpretation skills using images of outcrops in class. Patterns in the student evaluations indicate that I linked lecture, lab material and field trips effectively, something that I am continually striving to improve. This is especially challenging in this course because some field trips have to be scheduled during low tides for safety and accessibility issues which makes those labs harder to correlate with the class schedule.

From the student evaluation numeric scores, it appears that in Fall 2019 two students left negative comments which I interpreted to mean that I was not able to develop a good rapport with them. In subsequent course iterations I've made an effort to develop a good rapport with all students early on. Since Fall 2019 I have not seen comments of that nature. This can be seen in student evaluations in Fall 2020 and 2021 when students overwhelmingly commented on how engaged they were with the material and the inclusive nature that I created in the lecture and in the labs.

**Glacial Geology** - I have taught this course under several titles: GEOL 380 Special Topics in Geology - Glacial Geology (Spring 2019), GEOL 531 Advanced Physical Geology (Fall 2020), and Glacial and Periglacial Processes GEOL 452/552 (Fall 2022)

Course Description:

Covers the core principles of glacier formation, flow, the landforms eroded and deposited by flowing ice, as well as using glaciers as climate and paleoclimate indicators.

How does this course fit into the curriculum of the university?

Counts as 3 units of specialization units. Five units of specialization are required for BA and BS majors. Can be

counted towards the Environmental Systems with an option in Geology MS degree.

How is your teaching philosophy exemplified by this course?

***Active learning environment***

Although glaciers are a landform that few students have seen in real life, their presence in the media (e.g. glaciers melting due to climate change) seems to pique their curiosity. This curiosity about glaciers helps to create an active learning environment. I strive to bring glaciers and glacial geology to them by using personal photos and videos, maps, satellite imagery, published research as well as my own enthusiasm and experience in the subject matter. This tactic keeps students engaged in the material and encourages their curiosity for the subject. Additionally, since this course does not have a lab component, I use in-class exercises where students can work together on mapping exercises or making interpretations on real data related to glaciers.

***Place-based learning and using examples from scientific studies in the curriculum***

In the first iteration of this course, I used Greenland as a theme for examples and for our readings/discussions. I did this because Greenland has a diverse glacial environment and I'm very familiar with the glacial geology there. In Fall 2020, I started to include more examples of glaciers in the western U.S., especially the Trinity Alps and Sierra Nevada of California, where students were more familiar with their locations.

What special pedagogical problems does this course have, and how have you addressed them?

***Teaching an upper level course on a subject where students have very little prior knowledge***

Students have very little prior knowledge about glaciers (besides knowing generally they are melting because of climate change) before taking this course. This definitely impedes the pace of this upper-level course because I have to start with basic questions like 'what is a glacier?', 'what are the differences between glaciers and ice sheets?', and 'why are they important?' at the beginning of the course. When I first taught this course in Spring 2019, I found it hard to increase the pace of the course after starting so slowly and introducing basic topics. In future iterations of the course, I have set clear expectations of the students in the first class so that they are not caught unaware when the course speeds up and we address more complicated topics like glacier flow. I have also encouraged them to read the textbook chapters ahead of my lectures so that information isn't so new to them. To increase access to the textbook, I have put several copies on reserve at the library.

Were there any trends in the student evaluation comments? If so, how have they led (or how will they lead) you to change your approach to this course?

***Overall instructor rating = lecture: range [redacted] ([redacted] average) (Section 7B)***

Student comments were positive with many of them indicating that they enjoyed the multi-faceted approach of lecture, in-class activities, readings, videos and demonstrations. In Spring 2019, some students enjoyed reading scientific papers and others struggled with it. In Fall 2020, to help students get the most out of scientific publications, I started reading a paper together during one class period where I showed students some tips to breaking down the science portrayed in the papers. For example, looking for the study's objectives at the end of the introduction section or by annotating figures and graphs to make them easier to interpret. In Fall 2020, in an effort to bring peer-reviewed papers to life, I invited several colleagues to give short (15 minutes) talks about their studies via Zoom and then to answer questions or discuss the science with the students. Colleagues from Maine, New York, Denmark, Nevada and Humboldt participated. The students really enjoyed this aspect of the course and often these sessions would extend to the end of the class because students had so many questions for the guest lecturers.

Some student comments in 2019 suggested a field-based component for this course and this course has now been changed to a fall semester course in order to accommodate a field trip. In Fall 2020, the course was taught 100% online, but in Fall 2022 I have added a weekend field trip to the schedule.

**Advanced Field Methods (GEOL 435)** (Taught Spring 2018)
Course Description: In-class and weekend field projects include: map proficiency, advanced mapping of geological structures and lithological features on topographic maps and aerial photographs, geologic field notes, synthesis of field data with GIS analysis, measuring stratigraphic sections and developing geologic cross-sections, technical report writing. Offered every spring semester.

How does this course fit into the curriculum of the university?
Required for the BA and BS majors and is a prerequisite for GEOL 475 (Field camp).

How is your teaching philosophy exemplified by this course?
Since this is the capstone class for students receiving their BS degrees, the curriculum is really focused on their critical thinking skills. In spring 2018 I co-taught this class with Dr. [redacted] and we tried to set up the course so that students had sufficient background information on the geologic structures and processes before we went on the two weekend-long field trips to the mapping areas. Once at the mapping areas we gave the students an introduction to the field area before they were 'set loose' to map the area in groups of three. Once students were mapping independently, they had to use critical thinking skills to map the geologic features of the area. Many of them were confused and frustrated at first and then as they continued to map they started to put together the pieces of the puzzle. Although the two mapping areas (Cape Blanco, OR and Mt Shasta, CA) for this class were not local per se, the geology at both locations related directly to the Cascadia Subduction Zone. Students were empowered by using their knowledge that they gained in previous Cal Poly Humboldt geology classes to make interpretations at the mapping areas.

What special pedagogical problems does this course have, and how have you addressed them?
***Students at varying levels of proficiency***
One of the biggest challenges of this class was that there was a large range of mapping skills and competencies (locating themselves on a map, using Brunton compasses, etc.) among the 29 students in this class. Students who take this class have all completed Geologic Field Methods I (GEOL 335) as a prerequisite, however many of them took it with different instructors and some of them took it several semesters prior and then have not used their mapping skills since. This challenge was increased by having to help students more one-on-one during the first field trip. My co-instructor, Dr. [redacted], and I addressed this issue by splitting the group into two groups on the first day of mapping. We each had a group of ~15 students which allowed us to make sure that students were competent in their field skills and in the stratigraphy of the mapping area before they started collecting their own data.

Were there any trends in the student evaluation comments? If so, how have they led (or how will they lead) you to change your approach to this course?
***Instructor rating for lecture =*** [redacted] ***(Section 7B)***
This was the first time that Dr. Brandon Browne and I taught this class at Cal Poly Humboldt and we spent many hours planning the class and scouting the field locations at Mt Shasta and Cape Blanco on our own time. Students suggested they would like to have more turnaround time between mapping in the field and turning in the reports. We kept the turnaround time short in order to start preparing them for their upcoming Field Camp (GEOL 475) experience (very short turnaround times) and to have the students complete the project while the information was fresh in their minds. In the future giving them an extra few days may be beneficial. One student commented that they didn't have enough food on the weekend field trips- this is surprising as both weekends we came back with extra food and there was plenty of food at each meal time. The most shocking comments I've received since starting to teach at Cal Poly Humboldt came from a few students who commented on my 'bad attitude' and 'sarcasm' on the second field trip to Mt Shasta. I've thought about these comments a lot since reading these evaluations and I don't remember having any negative interactions with any of the students. I was out of my

comfort zone during the second field trip when we were mapping metamorphic rocks, something I have far less experience with than mapping sedimentary rocks and landforms. However, I was prepared for the mapping and spent the full two-day field trip hiking all over the field area helping students with their maps. This is something that I will be far more cognizant of on future field trips. In contradiction to these comments, other students commented that I was approachable and helpful in the field. Since Spring 2018, I haven't had the opportunity to teach this course a second time.

**Colloquium (GEOL 455)** (Taught Spring 2019)
Course Description:
Geology colloquium with a series of lectures given by invited geoscience professionals.

How does this course fit into the curriculum of the university?
Serves as 1 unit of 5 specialization units needed for BS and BA students. Taken as credit/no credit.

How is your teaching philosophy exemplified by this course?
***Examples from scientific studies in the curriculum***
Since colloquium is composed of geoscientists giving presentations on their research and careers, students were exposed weekly to a variety of scientific studies. In Spring 2019, colloquium topics spanned a wide variety of geoscience topics including hydrology, structural geology, glacial geology, and hydrothermal deposits. Therefore, every week students could observe how geoscientists presented their research, analyzed their data and made interpretations on those data.

What special pedagogical problems does this course have, and how have you addressed them?
Since this course is taken as credit/no credit, the biggest pedagogical problem is not attendance, but student engagement. Sometimes the presentations were at too high a level for most undergraduates or the presenter was particularly dry in their approach. In addition to students writing a brief (250-300 word) summary of one of the talks and I encouraged them each to come out to dinner with one of the speakers, which was paid for by the department. Largely, all of the presenters were excited to talk with students and often listened to the students and gave advice on careers in geology and life after college. I think these dinners were the best way for students to connect with professionals and to stay engaged in the talks.

Were there any trends in the student evaluation comments? If so, how have they led (or how will they lead) you to change your approach to this course?
This course was not formally evaluated.

**Field Camp (GEOL 475)** (Taught Spring 2019, 2021)
Course Description: Four weeks supervised field work in the western US. Principles/methods for geological mapping. May include preparing maps, cross-sections, stratigraphic columns, written and oral geologic reports. Living expenses and a portion of camp expenses borne by student.

How does this course fit into the curriculum of the university?
GEOL 475 is the capstone course required for all BS majors and some BA majors choose to take it as well.

How is your teaching philosophy exemplified by this course?
***Active and inclusive learning environment***
Field camp is, by definition, active learning. This course is the capstone of the BS degree and so students use many

of the skills and techniques they've learned during their time as a geology major at Cal Poly Humboldt. Additionally, they are consistently met with real-world geology problems (e.g. where to draw geologic contacts on a map, geologic strata that don't make sense at first, working with partners they barely know). Although I do my best to check-in with each mapping group twice per day, the mapping areas are so large that some days I only spend a short amount of time with each mapping group. This means that students are making independent decisions all day, without the regular input from an instructor or supervisor, which they will eventually do in their (geologic) career.

Additionally, Field Camp is a class where students could potentially feel ostracized if they are not as physically fit as their mapping partner or are socially awkward. Therefore, I strive to create an inclusive environment at Field Camp. For example, if we hike together as a group at the beginning of the day to the top of a steep hill, I will stay at the back and hike with the slowest hiker; taking frequent breaks myself so that they don't feel ashamed or stressed about keeping up. I remind students that they need to stick together in their mapping groups while in the field and point out that those groups that are moving quickly across the mapping area often miss key relationships between the geology. Additionally, if there is a student who has done quality mapping or made an interesting find and needs some confidence, I try to highlight their work in front of the other students at the daily all-camp meetings.

What special pedagogical problems does this course have, and how have you addressed them?

***Challenging work conditions***

Field Camp is a unique course as it occurs over ~4 weeks where students are camping and working in remote (and sometimes harsh) conditions which is challenging both mentally and physically to many of them. When I co-taught Field Camp in Summer 2019, I taught the latter two weeks in the eastern Sierra Nevada, California. When I arrived, students were tired, many of them had been sick with, or were just recovering from, a cold virus that had made its way through camp. For the first few days of my session, I tried to alleviate the physical and mental strain on students by driving them to the highest elevation of the field area in the morning and having them walk downhill for the day while they mapped geologic features, meeting them at the base of the field area with the vehicles at the end of the day.

In addition to working outside all day, students have short deadlines to complete maps and associated writing assignments, which they do in a large communal study tent. I set clear goals each day and tried to make the assignment deadlines delayed the first few days so students could recover. Additionally, I held camp meetings (required of all students) every evening after dinner to answer questions, discuss complicated mapping issues and to check-in with them.

***Creating meaningful online field experiences during the Pandemic***

In early summer 2021, the first two weeks of Field Camp were held online (due to the pandemic) and the subsequent two weeks were held in the field on the eastern side of the Sierra Nevada. Teaching field skills online is already challenging, but it was especially so because students were exhausted from online learning, having spent the past 2.5 semesters online. To try to alleviate that, I created short, lively lectures with breaks for active learning (often group work in breakout rooms) and shorter assignments with faster turnaround times, so students didn't get bogged down in working on assignments for long hours. I also piqued their interest by creating online activities that would help prepare them for working in some of the mapping areas in the following weeks. They mapped glacier deposits in areas nearby to where they would be mapping them once we got to the eastern side of the Sierra Nevada.

Were there any trends in the student evaluation comments? If so, how have they led (or how will they lead) you to change your approach to this course?

***Instructor rating for lecture = [redacted]/5 GEOL 475 & in Spring 2021 it was not formerly evaluated (Section 7B)***

Student comments were positive. One trend in the comments is that I provide more constructive feedback on

drafts of students' maps. In 2019 when I taught this course for the first time, I offered feedback on maps (via sticky notes) only once or twice before they were finalized. In 2021 I gave more feedback and gave it more often, which helped increase student mapping skills and confidence.

**Senior Thesis/Directed Study (GEOL 490/492/499)** (Taught every semester Fall 2018 to Fall 2022)
Course Description:
Directed study of independent research. GEOL 492 culminates in a senior thesis (written and oral presentation).

How does this course fit into the curriculum of the university?
Counts as 1-3 units of the 5 specialization units required for BA and BS students.

How is your teaching philosophy exemplified by this course?
***Active learning***
Conducting independent or directed research is by definition active learning. Students learn how to make research decisions on their own, how to ask scientific questions, and how to budget their time with a large project. I meet with students on a weekly basis to guide them through this process, as some students need more support through the scientific process than others.

***Critical thinking***
Independent research is an ideal format for students to learn to critically think about scientific questions with my support and on their own. When working with real data (e.g. mapping moraines, analyzing sediments in lake cores), students have been confronted with data that 'don't make sense' based on their mapping location or relative position to other deposits. They then have to come up with potential hypotheses for their formation, using critical thinking skills. There is sometimes a steep learning curve associated with learning to think critically, but as students become more familiar with their research projects, they start to see outliers in their data and come up with potential hypotheses for their causes. Based on my experiences thus far mentoring students through independent research projects, students who have conducted independent research become more confident in themselves and their scientific abilities.

What special pedagogical problems does this course have, and how have you addressed them?
***Varying levels of independence***
Students have varying levels of independence and drive and I have to constantly shift to accommodate and support them individually. I've found that setting clear expectations at the beginning of the project helps students. For both thesis (GEOL 490 & 492) and independent study (GEOL 499) students I set up regular meetings (weekly or bi-weekly) with them to check in on their progress, help them work through any challenges and set them up with clear goals and expectations for our next meeting.

Were there any trends in the student evaluation comments? If so, how have they led (or how will they lead) you to change your approach to this course?
This class was not formally evaluated.

**Quaternary Stratigraphy (GEOL 553)** (Taught Spring 2020, 2022)
Course Description:
This course focuses on records of global change during the recent geologic past. We will address changes in climatic, geomorphic, sedimentologic and biologic systems through the last 2.6 million years, and discuss the causes and implications of those changes. The course will focus on both theory and practice. When possible, we

will focus on the Quaternary records of the North American west and try to put them in a larger context by tying them to other global records of Quaternary change.

How does this course fit into the curriculum of the university?
Satisfies 4 units of the specialization requirement, 5 units of which are required for both BA and BS geology majors. Can be counted towards the Environmental Systems with an option in Geology MS degree.

How is your teaching philosophy exemplified by this course?
***Active learning environment & use of scientific data in the curriculum***
This upper-level course is ideal for active learning. Students present and lead the discussion of published paper twice during the semester. In these presentations, students are asked to give a brief background on the study, which they investigate on their own. This also exposes them to how science is conducted and how data are interpreted. However, the lab portion of this course is where much of the active learning occurs. First, I created eight labs from scratch using published data that students organize, graph and then interpret. Students gained first-hand experience analyzing real data that is often 'messy' (e.g. missing data points, outliers, data that do not 'make sense'). This was challenging for the students, but ultimately gave them the experience they can use when they enter the job market or start graduate school. Second, in Spring 2022, I created a final research project where students collected their own mud cores from the Arcata Marsh and then conducted basic analyses on them to identify large earthquake events as recorded in the sediments. Over the course of five lab periods, students worked in small groups to describe their cores, measure loss-on-ignition and magnetic susceptibility, and investigate the macrofossils in their cores by creating smear slides and viewing them under a microscope. They analyzed and plotted the data, made interpretations and then presented their work by creating scientific posters based on their results and presented them at the last lab meeting.

What special pedagogical problems does this course have, and how have you addressed them?
Both undergraduates and graduate students are enrolled in this course. This is a challenging for me because I want to keep the graduate students engaged and challenged while not losing the undergraduates. Graduate students are generally more confident and willing to ask questions in class, which makes it difficult to have a balanced discussion where all students participate. I ask the graduate students to present/discuss their papers early in the semester, so that the undergraduates can have a model on which to base their presentations, which has worked out well in the past. Additionally, as the semester continued, the undergraduates became more confident and willing to ask questions in class. Ultimately, I think that the undergraduate students benefit from interacting in courses with graduate students.
This course has now been co-listed (e.g. GEOL 453 and 553, see description in bulleted list of accomplished teaching criteria, page 23) so that there are different expectations of the undergraduate and graduate students.

Were there any trends in the student evaluation comments? If so, how have they led (or how will they lead) you to change your approach to this course?
***Overall instructor rating = lecture: range [redacted] ([redacted] average), lab: range [redacted] ([redacted] average) (Section 7B)***
Student evaluations were very positive for the lecture and lab portion of this course. Students indicated that they were most engaged during the paper presentations/discussions and while analyzing real data in the labs. I will continue to do these activities and will develop more labs like this for future iterations of this course. Feedback in the Spring 2022 student evaluations indicated that they learned a lot about conducting research from the marsh coring project and also really enjoyed it. In future years, I will continue to include this final project and will likely use different locations around Humboldt Bay and adapt it to include new and different analyses (e.g. grain size measurements).

**MS Thesis/MS Independent Study (Supervision) (GEOL 690/699)** Taught every semester Fall 2020 to Fall 2022
Course Description:
GEOL 690 MS Thesis (1-6 units) - Conduct research and prepare written thesis as required for grad degree. GEOL 699 MS Independent Study (1-5 units) – Possible modes: reading, conference, research.

How does this course fit into the curriculum of the university?
Graduate students in the MS program in Environmental Systems with an option of Geology can take up to 6 units of GEOL 690 and up to 5 units GEOL 699. Enrolling in these classes allow students to earn credit towards their degree while working on their MS research.

How is your teaching philosophy exemplified by this course?
***Active learning***
Conducting research as a graduate student is the constant process of active learning. From learning how to collect peat samples using a Russian Peat Borer to measuring loss-on-ignition in the lab, a lot of being a graduate student is 'learning by doing'. In this respect, I think that active learning helps students to build ownership in their research and to increase their confidence.

***Critical thinking***
In order to start developing critical thinking skills, students write a thesis proposal that is due at the end of their first semester. I've found that taking the time to lay out their project in proposal form allows them to critically think through the implications of their research. Part of writing a proposal is knowing the literature associated with it and therefore students need to read the literature and assess how their work fits into what is already known about the subject.

What special pedagogical problems does this course have, and how have you addressed them?
***Students have varying needs for support***
My role as a mentor and advisor to graduate students is to support them through the graduate school process, including helping them choose appropriate classes, the inception of their research project, field work, lab analyses, data interpretation and reaching scientific conclusions. I've found that graduate students need more support at the beginning of their graduate career and gain more independence as they progress. However, I'm constantly having to adapt to their changing needs. For example, some students have become quite independent while working in the lab, but then need more support when it comes to writing their thesis. Thus far I've found that having regular meetings with the graduate students, setting clear expectations on both our parts and good communication have been the key to supporting them through the MS thesis process.

Were there any trends in the student evaluation comments? If so, how have they led (or how will they lead) you to change your approach to this course?
This class was not formally evaluated.

**In-service Professional Development in Geology: Communicating Science (GEOL 700)** (Taught Fall 2019, 2020)
Course Description:
Practice of science communication. Students will learn to communicate effectively beyond their peers to broader, non-science audiences, promoting understanding of its wider relevance to society, and decision-making at all levels. This course traditionally has been taught as one to two classroom meetings and a subsequent all-day field trip (12-16 hours total). The two class meetings are meant to prepare the students for what they will see or do in the field. In Fall 2020, I had to adapt this course to a series of weekly meetings when the course was moved online. Additionally, GEOL 700 is generally taught as a 100-level course (there are no pre-requisites) and in the

past, both undergraduate and graduate students have participated as well as students from other majors and members of the community. The instructor of this course decides the "theme" of the course which has included titles such as "Finding Faults" (focusing on the local tectonics) and "Paleontology for Docents" (focusing on introductory paleontology).
Both times I've taught this course, I chose the theme of "Communicating Science". Geology majors at Cal Poly Humboldt learn the language of geology, but practicing translating that to everyday language that the general public understands is critical. Effective science communication to broad, non-science audiences has been shown to increase support of science by linking the relevance of science to society as a whole, and allowing for more informed decision making at all levels including policy makers, government officials and community leaders (Feliú-Mójer, 2015).

How does this course fit into the curriculum of the university?
Serves as 1 unit of 5 specialization units needed for BS and BA students.

How is your teaching philosophy exemplified by this course?
***Active & inclusive learning environment***
In Fall 2019, we met for one in-class meeting on a Friday afternoon where I introduced the importance of science communication. I created an active learning environment where students worked in small groups to translate common science terms that have different non-science meanings (e.g. abstract, uncertainty, theory). Students also worked in small groups to translate abstracts from scientific papers using only the 1000 most used words in the English language. Students seem to find this activity fun and challenging and were very engaged in the process of describing geologic events/processes using simple terms.
For the Saturday field trip, we went to the Mad River Slough where students worked in small groups and interpret the seismic history of the area based on cores of mud they collected. I created an inclusive environment by borrowing extra coring gear so that students could work in small groups (5 students per group) and each student could try their hand at coring (if they wanted to). After each group made interpretations of the seismic history of the region based on their mud cores, they needed to describe their findings to an audience of ~15 people (members of the public and other Cal Poly Humboldt students not in the course) who had no prior knowledge of the science.
In Fall 2020, when the course was taught weekly online, I created the "Seven Principles of Communicating Science to Non-Scientists" and each week we focused on a different principle. For example, Principle #1 is *Know your audience* and so we practiced delivering the same topics (e.g. climate change, dam removal, how lava is formed) to varying audiences from policy makers to kindergarten students.

What special pedagogical problems does this course have, and how have you addressed them?
***Students of varying knowledge levels***
This course attracts students of all levels from sophomores through seniors, graduate students and sometimes non-geology majors. This means that I have practice my own communication skills to convey the information to a varied audience. Although this issue poses a challenge to me as the course instructor, I think ultimately having students of varying backgrounds challenges them to communicate effectively and practice their new skills while creating community. Additionally, many of them have no or little background in science communication, so this levels the playing field.

***Finding volunteers to be the general audience***
Finding volunteers who are willing to devote ~2 hours of their weekend time to act as the general public, for the Saturday field trip aspect was a challenge and was time consuming on my part. Many non- geology Cal Poly Humboldt students signed-up to volunteer and then at the last minute did not show up, which added a lot of stress since the culmination of the course was to explain their science to a large audience. In the future I'd like to team

up with the Communications department and have journalism students participate in the course. This may be a good way to have journalism students practice science journalism and geology students practice their science communication clearly, effectively and without jargon.

Were there any trends in the student evaluation comments? If so, how have they led (or how will they lead) you to change your approach to this course?

***Overall instructor rating = lecture: range [redacted] ([redacted] average) (Section 7B)***

The evaluative comments by students were overall very positive indicating that they enjoyed the challenge of communicating science, working with their peers and that they learned a lot by coring the Mad River Slough and explaining the science to an audience. One student suggested an essay as a wrap-up assignment to the course and I like this idea. In the future I will ask them to reflect on their experience of science communication as the final assignment. One trend in the Fall 2020 comments was that students wanted more class time. In future iterations I'll add the field trip back into the course and make the meetings longer so that we can spend more time studying and practicing science communication.

***Reference***

Feliú-Mójer, M., 2015. [redacted]

5. Professional Development: Teaching

I have attended several professional development teaching workshops here on Cal Poly Humboldt's campus (Table 2). I have participated in a range of workshops from the New Faculty Learning Community workshop series to workshops to identify inexpensive or free learning resources (e.g. textbooks) for students. One of the more time intensive trainings was the *Workshop for Early Career Geoscience Faculty: Teaching, Research & Managing Your Career* at the University of Maryland, July 22-27, 2018 (Table 2; Section 7C). This intensive 6-day workshop covered strategies for becoming successful geoscience faculty, including: teaching effectiveness, developing a new research program, applying for grants, financial advising, time management and work-life balance. I learned several new teaching techniques for creating active learning and inclusive classrooms that I have since incorporated into my teaching. I also made connections with other early career geoscience faculty that led to increased support and collaborations.

**Table 2. Professional Development related to Teaching AY 17-22 (Section 7C)**

| Date | Workshop/training topics | Host |
|---|---|---|
| 1/13/22 | Spring professional development day (2 hours) | Cal Poly Humboldt, Center for Teaching and Learning |
| 3/10/21 | Culturally Sensitive Teaching in STEM (2 hours) | California State University, Los Angeles, Department of Research |
| 1/11-1/12/21 | Spring professional development day (16 hours) | Cal Poly Humboldt, Center for Teaching and Learning |
| 6/15-7/13/20 | QLT Pivot to online teaching course (20 hours) | Cal Poly Humboldt, Center for Teaching and Learning |
| 1/16/20 | Spring professional development day including Workshop on Facilitating Equity at Cal Poly Humboldt (4 hours) | Cal Poly Humboldt, Center for Teaching and Learning & Cal Poly Humboldt Equity fellows (Dr. White and Dr. Villarreal) |
| 12/17/19 | Classroom Management Strategies: Inclusive Design to Support Student Behavior (1 hour) | Cal Poly Humboldt, Center for Teaching and Learning |
| 5/16-5/17/19 | Whiteness and Microaggression Training (4 hours) | Cal Poly Humboldt, Center for Teaching and Learning |
| 1/18/19 | Implicit Bias Training (2 hours) | Cal Poly Humboldt, Center for Teaching and Learning |
| 7/22-7/27/18 | Workshop for Early Career Geoscience Faculty: Teaching, Research & Managing Your Career at the University of Maryland (40 hours) | National Association of Geoscience Teachers (NAGT) |
| 5/15/18 | Finding inexpensive and free resources for classes (2 hours) | Cal Poly Humboldt Office of Sustainability |
| 5/9/18 | Sharing issues in classroom and possible solutions, end of year celebration (2 hours) | New Faculty Learning Community |
| 1/12/18 | Struggles and Solutions: A Dialogue on Classroom Management with Troy Lescher & Learning-Centered Syllabus with [redacted] (2 hours) | New Faculty Learning Community |
| 8/15-8/16/17 | New Faculty Orientation: Highlights that productively impacted development as an instructor at Cal Poly Humboldt: "Inclusion, Equity, Diversity." Presented by [redacted], Executive Director, Office of Diversity, Equity, & Inclusion. Canvas lab time with instructional designers. Center for Teaching and Learning information session with [redacted] and [redacted]. (16 hours) | New Faculty Learning Community |

Summary of Teaching

Based on the Geology Department's RTP Standards for Teaching, **I have achieved all of the goals within the Essential performance category and all but one goal within the Excellence category**. Based on the criteria for promotion of assistant to associate professor, **I have achieved an 'Excellent' rating in teaching.** I have achieved the following "indicators of excellence" (Table 1):

- I have consistently earned high (>[redacted]) scores on student evaluations. My instructor rating for both lectures and labs ranges from [redacted], however all but one instructor rating range from [redacted] (see Section 7A).
- I have regularly supervised quality student research (See Scholarship section, page 28). I am currently mentoring three students pursuing MS degrees ([redacted] and [redacted] expected graduation December '22 and [redacted] expected graduation December '23). I have also supervised quality undergraduate research projects of two completed BS theses ([redacted] '19, [redacted] '21), two in-progress BS theses ([redacted] '22 and [redacted] '23). Additionally, [redacted]'s senior thesis was awarded "Outstanding Thesis" by the faculty in the Geology Department. These students represent a range of academic skills and background.

- I assumed difficult teaching assignments, including: Field Camp (GEOL 475), where I taught mapping skills to a group of ~15 Geology Major seniors in a remote region for ~2 weeks (taught spring 2019 and 2021); Quaternary Stratigraphy (+ lab; GEOL 553), which is a graduate course (with a lab) that I created from scratch as it hadn't been taught since 2015.
- I developed new courses needed by the department including Earth Systems History (GEOL 210). I also worked with the Department Chair to propose cross-listing courses to the Integrated Curriculum Committee in order to increase student enrollment in upper-division courses. These courses included Quaternary Stratigraphy (GEOL 553 cross-listed to GEOL 453) and Glacial and Periglacial Processes (GEOL 552 cross-listed as GEOL 452). (See examples of cross-listed course syllabi in Supplement A.)
- I have reflected on my intersectional identity, positionality and power and the effects of these factors on student learning by emphasizing inclusion in the classroom in all of my classes (see my Teaching Philosophy, page 5). I have done this by making materials available to students ahead of the lectures to support various learning styles, by using the 'Muddiest Point' exercises to elicit questions from students who may not be comfortable asking questions in class, and by co-authoring two department documents relating to inclusion and racism (see Section 9A, 9-15-2021 Department Code of Conduct for Field Trips and 6-9-2020 letter to the Humboldt Geology community regarding racism in geosciences).
- I have collegial letters documenting my reflective and inclusive teaching style.
- I have expanded my teaching approach by attending numerous seminars and conferences (See Table 2).
- I have successfully directed independent study courses for two students in AY 19-20 in which they created detailed maps of glacial deposits in northern California (GEOL 499) ([redacted] '21 and [redacted] '21 – note this independent study was separate from [redacted]'s thesis project).
- I have continuously updated my courses with the most recent research in that field of study. For example, I've updated my Sedimentary Geology (GEOL 332) course to now include a module about the environmental and climatic threats of sand mining. Sand is the third most used natural resource behind clean air and water. (See homework and lab related to sand mining in Supplement A.)
- I have prepared high-quality teaching materials including: twelve labs for GEOL 332 that I developed, three of which are field trips where students practice skills learned in the lecture portion of the course, and eight new labs in GEOL 553 that were based totally on real scientific data. In Spring 2020 I abruptly pivoted to creating online content for GEOL 109, where I created six new modules including online activities, pre-recorded lectures and virtual field trips. (See GEOL 109 syllabi pre and post spring break 2020 when the pivot to online occurred, in Supplement A.). Additionally, I converted other classes to the online format during the pandemic when I had to teach courses fully or partially online. In AY 20-21 I created rock and sediment kits for hands-on learning at home for GEOL 109 and GEOL 332.
- I have incorporated outreach opportunities in GEOL 700 where students demonstrated geologic field techniques to the general public and presented their findings on the seismic history of the region.

**III. SCHOLARLY/CREATIVE ACTIVITIES (Appendix J, Section IX.B.2.)**

**Evaluation of Department of Geology RTP Standards for Scholarship**

For the granting of tenure, the Department expects a faculty member to provide evidence of an on-going scholarly program. The geology department takes a broad view of scholarly activity in accordance with "Boyer's Model". Each faculty member is required to demonstrate contributions to knowledge in their area of specialization. It is expected that a faculty member will provide evidence of their efforts towards the dissemination of scholarly work in peer-reviewed articles published in scientific journals and submission of extramural research grant proposals is strongly encouraged. Contributions made during any service credit years granted to a faculty member will have

equal standing to Cal Poly Humboldt-based contributions. The timing of contributions is not critical, but evidence of scholarly activity during employment at Cal Poly Humboldt must be present.

**Table 3. RTP Standards for Scholarship – Assistant Professor to Associate Professor**

| Category I | Category II | |
|---|---|---|
| Disseminated original research by peer-reviewed publication in scientific journal (10) | Original research manuscript for peer-reviewed publication or extramural grant proposal in preparation (1) | **Minimum Essential**<br>At least <u>one</u> peer-reviewed publication as a first or lead author published during the review period and an average of at least one Category I or Category II contribution per year in the review period. |
| Received extramural research grant to support research | Received intramural research grant to support research (2) | **Good**<br>At least <u>one</u> peer-reviewed publication as a first or lead author published during the review period, at least <u>one</u> more Category I contribution in the review period, and an average of at least <u>one</u> Category II contribution per year in the review period. |
| Supervision of a student who has completed a MS thesis in Environmental Systems with an option in Geology | Supervision of a student who has completed a BS thesis (2)<br>Lead author on abstract at professional meeting (1)<br>Submitted, but unfunded extramural research grant to support research | **Excellent**<br>At least <u>one</u> peer-reviewed publication as a first or lead author published during the review period, at least <u>two</u> more Category I contributions in the review period, and an average of at least <u>one</u> Category II contribution per year in the review period. |

Based on the Geology Department's RTP Standards for Scholarship, **I have achieved an Excellent rating** with 10 Category I Contributions and 6 Category II contributions.

<u>My Scholarship Goals</u>

Over the past five years I have had two main scholarship goals: 1) To continue to publish my research pertaining to the fluctuations of the Greenland Ice Sheet; and 2) To start new research in northern California by applying for grants, conducting field work, renovating the Paleoclimatology Lab (FH 14) and getting students involved in research both in the field and in the lab. Additionally, **I am constantly striving to incorporate equity into my scholarship through the mentorship of students in research projects.** I do this by having regular meetings with research students where we focus on their research (e.g. interpreting their data or going over a thesis draft together), by developing a realistic schedule for completing their research and supporting them through that plan, and by building a lab group community among the research students (undergraduate and graduate students) so that they have peer or 'near peer' support throughout the research process.

a. Completed Scholarly Activities

**Category I: Peer-reviewed publications - Ten peer-reviewed publications** (see below descriptions and Section 8A)

<u>First Author Peer-reviewed Publications (AY 17- present)</u>

I have two first author peer reviewed publications:

1) [redacted] 2020. Multi-phased deglaciation of South and Southeast Greenland controlled by climate and topographic setting: Quaternary Science Reviews, vol. 242.

I developed this study with Dr. [redacted] based on fieldwork we conducted in southern and southeastern

Greenland. I conducted all of the $^{10}$Be lab work and analyzed the results. I wrote the manuscript and managed input (comments, suggestions, edits) from my eleven co-authors. This study uses forty-one $^{10}$Be ages along the south/southeastern coast of Greenland to determine the timing of deglaciation of the Greenland Ice Sheet. We show that the ice sheet retreated first from South Greenland between 14.8 and 11.9 ka and is associated with increased air temperatures at the time. The southeastern portion of the Greenland Ice Sheet retreated later, by 11.3 ka, likely due to increased precipitation in the region and the higher alpine topography that would have allowed the ice sheet to persist there longer. This study is published in the journal Quaternary Science Reviews, a leading international journal in the Quaternary sciences. It focuses on a range of Quaternary geology, from geomorphology and paleoclimatology to archaeology and soil science. Its impact factor is 4.456 and has a 44% acceptance rate.

2) [redacted] 2018. Middle to late Holocene chronology of the southwestern margin of the Greenland Ice Sheet: a comparison with temperature and precipitation records. Arctic, Antarctic and Alpine Research, vol. 50(1).

I developed this study as part of my PhD research at Dartmouth that was independent from the research for which I was funded. I conducted mapping of moraines and collected the rock samples in southwestern Greenland. Additionally, I completed all of the $^{10}$Be lab analyses and data interpretation. This study focuses on the timing and extent of the Greenland Ice Sheet in southwestern Greenland during the middle to late Holocene, a time period when there are very few records of ice sheet extent. Using sixteen $^{10}$Be ages of boulders on moraines and bedrock, we show that average rate of Greenland Ice Sheet retreat slowed from ~49 to 13 meters per year after 8.0 ka, likely due to the ice sheet retreating onto land at the head of Kangerlussuaq Fjord at this time. We also show that the historical advances of the ice sheet margin occurred within the past 200 years coeval with cooler summer temperatures as recorded by nearby paleoclimate records. This study is published in the international journal Arctic, Antarctic and Alpine Research which “seeks to advance understanding of the rapid environmental change occurring in cold regions through research into past, present, and future high-latitude and mountain regions”. It has a 1.880 impact factor (2.172 5-year impact factor) and has a 61% acceptance rate.

<u>Contributing Author Peer-reviewed Publications (AY 17- present)</u>
I have eight peer-reviewed publications as a contributing author (#3-10). For these studies (with the exception of study #6), I either collected the samples myself or assisted in collecting the samples in the field. I also conducted or assisted with the $^{10}$Be laboratory analyses for all of these studies (with the exception of study #5 which is a lake sediment study). I assisted in writing and editing all of the publications, but I played an especially integral part in the writing of publications #3, 4, 7, 8, and 9.

3) [redacted] 2022. Late-glacial and Holocene glaciation history of North and Northeast Greenland: Arctic, Antarctic and Alpine Research, vol. 54, p. [redacted].

4) [redacted] Cosmogenic nuclide inheritance in Little Ice Age moraines- A case study from Greenland: Quaternary Geochronology, vol. 65, p. [redacted].

5) [redacted], 2021. Holocene glacial history of Renland Ice Cap, East Greenland, reconstructed from lake sediments: Quaternary Science Reviews, vol. 258, p. [redacted].

6) [redacted] 2021. Younger Dryas ice margin retreat in Greenland: new evidence from southwestern Greenland: Climate of the Past, [redacted].

7) [redacted], 2020. Contrasting modes of deglaciation between fjords and inter-fjord areas in eastern North Greenland: Boreas, vol. 49, p. [redacted]

8) [redacted] 2019. Local ice caps in Finderup Land, North Greenland, survived the Holocene Thermal Maximum: Boreas, vol. 48, p. [redacted].

9) [redacted] Skov, D.S., 2018. Instability of the Northeast Greenland Ice Stream over the last 45,000 years. Nature Communications, vol. 9(1), p. [redacted].

10) [redacted] 2018. Relative Sea-Level Changes and Ice Sheet History in Finderup Land, North Greenland. Frontiers in Earth Science, vol. 6.

(See section 8A for links to the publications. All publications are intended for an audience of peers in geoscience.)

I have achieved the following six Category II Contributions in AY 17-22 (an average of at least one Category II contribution per year in the review period are needed to achieve an "Excellent" criteria):

**Category II: Original research manuscript for peer-reviewed publication or extramural grant proposal in preparation**

As the lead PI, I wrote a grant proposal for the NSF [redacted] along with co-PIs Dr. [redacted] (CSU Northridge), Dr. [redacted] (University of Illinois, Chicago), and Dr. [redacted] (Cal Poly Humboldt). This interdisciplinary proposal seeks to determine the timing of glacier retreat and advance over the last ~12,000 years in the Trinity Alps of northern California. We propose using lake sediments, surface exposure dating, dendrochronology of ancient trees on moraines and modeling of glacier fluctuations. This region of northern California is unique because it, until recently, housed low elevation glaciers at low latitude. We hypothesize this is because of the proximity of the Trinity Alps to the moisture source of the Pacific Ocean and to the north-facing aspects of the cirques. We will submit the grant proposal to the NSF [redacted] by their deadline on October 20, 2022. (See 5/18/2022 NSF [redacted], Section 8C.)

**Category II: Received intramural research grant to support research**

<u>I received two intramural research grants to support my research</u>

1) In March 2021, I received a Faculty Incentives Grant from Cal Poly Humboldt Sponsored Programs Foundation in the form of a 3 WTU teaching release for Spring term 2022. This internal grant was to write a grant proposal for the [redacted] at NSF (see description in the above paragraph). I submitted the grant internally on May 18, 2022 and will submit it to NSF by their October 20, 2022 deadline. (See 3/3/2021 K. [redacted] award letter and 8/29/2022 K. [redacted] grant completion acknowledgment, Section 8C.)

Note that in March 2020, I also received a Faculty Incentives grant from Cal Poly Humboldt Sponsored Programs in the amount of $4000 of summer salary to write an extramural grant proposal for a National Geographic Explorer's grant (Section 8C). During the summer of 2020, the stress of the COVID-19 pandemic was overwhelming and I was concerned about my mental health. Therefore, I did not complete the grant proposal and I decided to forfeit the summer salary.

2) In October 2019, I received a Research Scholarship and Creative Activity (RSCA) grant through Cal Poly Humboldt Sponsored Programs in the amount of $4980 to purchase a Magnetic Susceptibility meter and sensor for the paleoclimatology laboratory. Magnetic Susceptibility measurements are used on lake sediments as a proxy for glacial sediment influx and to locate volcanic ash layers within the sediments. I purchased the Magnetic Susceptibility meter in Spring 2020 and it is regularly used by both graduate and undergraduate students working on independent research and by students in classes. (See 10/18/2019 K. [redacted] award letter, Section 8C.)

**Category II: Supervision of a student who completed a BS thesis.**

I have supervised two students who have completed a BS thesis and currently have two more students who will complete their BS theses in AY 22-23.

1) [redacted] ('21) completed a BS thesis entitled "[redacted]". [redacted] used dendrochronology of trees encapsulated in the dune sand to determine when the trees died as a proxy for dune migration. They conducted fieldwork at the dunes consisting of mapping tree locations and coring them. [redacted] prepared the tree cores and then analyzed them in the Dendroecology Lab on campus. Dr. [redacted] served as an informal advisor on this project. [redacted]'s thesis won the 'Best Senior Thesis Award' as voted by the Geology Department faculty.

2) [redacted] ('19) completed a BS thesis entitled "[redacted]". [redacted] used satellite imagery and various GIS programs to map moraines in the Trinity Alps as well as digitized maps from Robert Sharp's 1960 paper maps. She also conducted fieldwork with me in Union Creek valley in November 2018 where she used a high-precision GPS to map moraines on foot. She then calculated the equilibrium line associated with those glaciers and made calculations on the temperature depression that would have been achieved to create those glacial extents.

**Category II: Lead author on abstract at professional meeting.**

In Spring 2018, I attended the 48th Arctic Workshop at the University of Colorado Boulder. The Arctic Workshop is a multi-disciplinary convening of scientists – most of whom work in the Arctic. I presented a poster: [redacted] 2018. Sensitivity of a local glacier to Holocene Climate Change, Gletscher Lukket, Southeastern Greenland: 48th annual Arctic Workshop (Boulder, Colorado). (See section 8B for link to abstract.)

<u>Training related to Scholarship</u>

I have completed trainings offered by the CSU Chancellor's office and by the National Science Foundation on grant writing (Table 4) (See evidence in Section 8E).

| Date | Workshop topics | Host |
|---|---|---|
| 6/23/20 | Webinar: Diversity, Equity and Inclusion in NSF Broader Impacts (1.5 hours) | National Science Foundation |
| 2/8/19 | CSU Research Initiative Presentation and Grant Proposal Development Training (4 hours) | [redacted] from the CSU Chancellor's Office. |

**Table 4. Workshops and trainings related to scholarship that I've attended.**

b. In-Progress Scholarly Activities

I currently am mentoring four students on my own research projects.

1) [redacted] (expected graduation December '22) is a current BS thesis student working with me on research. She is determining glacier fluctuations on the west side of Mount Eddy, California, by examining lake sediments from Middle Deadfall Lake. She has completed all of her lab analyses (core descriptions, magnetic susceptibility, percent organic matter and sampling for radiocarbon dating) and she is currently writing her thesis.

2) [redacted] (expected graduation Summer '23) is working on her BS thesis with me. She is studying the age and accumulation rate of carbon in the Trinity Alps. [redacted] has completed her fieldwork and is starting to analyze her samples (percent organic matter and sampling for radiocarbon dating).

3) [redacted] (Cal Poly Humboldt Geology BS '20, expected graduation December 2022) is a MS student working with me. He is determining the timing of glacier fluctuations in the southern Klamath Mountains using lake sediments from Picayune Lake.

4) [redacted] is an MS student working with me to determine the age, accumulation rate of carbon and volume of carbon stored in a fen in southern Humboldt. She started working on this project in June 2022 and is conducting field work this semester with an expected completion date of December 2023.

New research related to Glacier Fluctuations in northern California

In July 2021 I spent two weeks leading a team of researchers coring two lakes in the Klamath Mountains. Dr. [redacted] and Dr. [redacted] (both at CSU Fullerton) assisted with the fieldwork as well as [redacted] (current MS student). Coring these lakes involved a lot of planning and complicated logistics including getting permission from a private land owner, applying for necessary permits from the US Forest Service (20 hours; Section 8D), completing the California Boater Education course and receiving my California Boater Card for boat safety (10 hours; Section 8D), and hiring and coordinating pack horses to haul ~600 lbs of gear into the lakes. We extracted several sediment cores from Picayune Lake and Middle Deadfall Lake, some of which are in the process of being analyzed by students ([redacted] MS Thesis and [redacted] BS Thesis). There are still sediment cores that we have not processed and analyzed yet that students and I will begin to work on in Spring 2023.

New research related to Peatlands

In conjunction with new biology colleagues [redacted], [redacted] and [redacted] at the California Department of Fish and Wildlife (CDFW), I have started new interdisciplinary research determining the age of peatlands (fens) in southern Humboldt and in the Trinity Alps. These fens are important because they are carbon sinks and also storage for fresh water. Currently one MS student ([redacted]) and one BS student ([redacted]) are working on fens research.

Summary of Scholarship

Based on the Geology Department's RTP Standards for Scholarship (see Section 3), **I have achieved ten Category I contributions** (ten peer-reviewed papers), **six Category II contributions** (AY 21-22: an extramural grant proposal in preparation, AY 19-21: received two intramural grants, AY 18-20: supervised two students who completed their BS theses, AY 17-18: presented at an extramural meeting). Based on the criteria for promotion of assistant to associate professor, **I have achieved an 'Excellent' rating in scholarship** (Table 3).

**IV. SERVICE (Appendix J, Section IX.B.3.)**

**Evaluation of Department of Geology RTP Standards for Service (see Section 3)**
All faculty are expected to contribute to the effective operation of the department, college, and university, and strive to promote the discipline of geology and Earth sciences in society. Evidence of faculty contributions over the period of evaluation for tenure and/or promotion is collected through written letters from colleagues inside and outside of the university, students, community members, and discipline- related professionals.

| Academic Year | Hours service |
|---|---|
| 2021-2022 | 123 |
| 2020-2021 | 249 |
| 2019-2020 | 83 |
| 2018-2019 | 96 |
| 2017-2018 | 163 |

**Table 5.** Summary of service hours by academic year. Note that in AY 20-21 and AY 21-22 I took on leadership roles in service.

## Table 6. Evaluation of RTP Standards for Service (Department of Geology)

All faculty are expected to contribute to the effective operation of the department, college, and university, and strive to promote the discipline of geology and earth sciences in society. Activities to consider in the evaluation of service may include some, but not necessarily all, and are not limited to the following. Asterisks * indicate completed/achieved item.

| | |
|---|---|
| **Department** | *1. Regularly, cooperatively, and collegially participate in department committees that contribute to department policy development, governance, and curriculum<br>*2. Mentoring other faculty members, participating in faculty/staff search committees, organizing, directing and/or implementing faculty development activities, establishing and maintaining effective, collaborative working relationships with colleagues and other university personnel, and participating in academic program development<br>*3. Demonstrate a pattern of serving as undergraduate thesis reader and graduate thesis committee member who works constructively and collaboratively with the student, advisor, and thesis committee<br>*4. Sponsoring/advising student organizations and student support initiatives<br>*5. Updating, retrofitting, and supervising use of department lab space<br>*6. Contributing to and maintaining a presence on departmental social media, newsletters and webpages |
| **University** | 7. Fulfilling administrative responsibilities at the university and college level; contributing to university and college policy development and governance<br>*8. Collaborating throughout the campus community on projects, workshops, presentations, and other campus activities<br>9. Contribute to department or university development through corporate grants, donations of equipment, and other entrepreneurial activities<br>*10. Contribute individually and collaboratively to the development of department and university academic programs<br>11. Service on personnel committees for other departments |
| **Community** | *12. Making research understandable and usable in specific professional and applied settings, including giving presentations for the public and school groups as well as engaging in broader-impact service activities related to a PI's external grant<br>13. Testifying as a scientific expert before legislative or congressional committees<br>*14. Writing for popular and non-academic publications, including newsletters, blogs and magazines directed to agencies, professionals, or other specialized audiences<br>*15. Serve as a knowledge source for media outlets and community members/groups<br>16. Participating in collaborative endeavors with schools, industry, or civic agencies<br>17. Consulting with local, county, state, federal, or international governments; schools, libraries, museums, parks and other public institutions; groups; or individuals<br>18. Providing public policy analysis, program evaluation, technical briefings for local, state, national, or international governmental agencies |
| **Professional** | 19. Participating in professional organizations<br>20. Evaluating programs, policies, or personnel for agencies and institutions<br>*21. Reviewing journal articles and grant proposals<br>22. Serving on panel reviews for external funding agencies (including mail and panel reviews)<br>23. Serving as external reviewer for geology programs at other universities<br>24. Serving as external thesis advisor |
| **Service Leadership** | *25. Chairing an active committee at the department, college, or university level<br>26. Chairing or leading a service activity in the community<br>27. Chairing a committee or holding office in a regional, state, or national organization<br>28. Develop and lead outreach activities and programs that enhance the university's ability to serve the needs of a diverse student body<br>29. Develop and lead training workshops and other forums for the dissemination of teaching techniques or demonstration of novel teaching methods<br>*30. Taking a leadership role in conferences as a panel organizer, panelist, or session convener<br>31. Develop and lead field trips for professional societies<br>32. Coordinate and lead curriculum developments across departments that have a demonstrably significant impact on the academic program<br>33. Serving as an editor for peer-reviewed scientific journals<br>34. Organizing and Chairing conferences |

| **"Minimal Essential"** | **"Good"** | **"Excellent"** |
|---|---|---|
| • Satisfaction of a variety of items 1-11.<br>• At least 30 or more hours of service per year beyond normal professional duties (defined above). | • Satisfaction of criteria for "Minimal Essential" and service in activities in items 12-24.<br>• At least 60 or more service hours per year beyond normal professional duties. | • Satisfaction of criteria for "Minimal Essential" and service in activities in items 12-24, and leadership role in service as described by items 25-34.<br>• At least 120 or more service hours per year beyond normal professional duties. |

**Service to the Department (Section 9A)**

**Note that I do not count service hours annotated with a * in my total service hours.*

*General Department Service*

- **Attended all weekly/bi-weekly department faculty meetings (24 to 32 hours/AY*).**
- **Regularly write recommendation letters for students (7-10 students/AY, ~12 hours/AY*)**
  Write letters for students (past and present) who are applying for internships and graduate school and act as a reference for those applying for jobs.
- **Routinely advise ~15 to 20 geology majors per semester (15 hours/AY*)**
  In Fall 2017, I temporarily advised 7 of Dr. [redacted] advisees when he was away on emergency family leave. Additionally, I advise ~5 geology minors per semester, many of which have decided to minor in geology after taking my GEOL 109 course.
- **Contributed to the department's Code of Conduct (AY 21-22; 3 hours)**
  Revised and updated the document for department field trips with Dr. [redacted] and other department colleagues.
- **Wilderness First Responder (WFR) Certification (AY 17-18 & AY 21-22; 96 hours total)**
  Originally certified in May 2018 (80-hour course) and re-certified in August 2021 (16-hour course) both by the National Outdoor Leadership School (NOLS). This certification has made me more competent in treating first aid issues when in remote field settings with students, where access to medical care is delayed. I have used this training when I assisted Dr. [redacted] on a class field trip in the Klamath Mountains where a student was experiencing secondary health issues and at Field Camp (GEOL 475) in Spring 2021 when some students experienced heat exhaustion while conducting field mapping. (See WFR certification cards dated 5-25-2018 and 8-15-2021.)
- **Contributed to the Geology Department's anti-racism policy (6/9/20; 3 hours)**
  Co-authored with other faculty a letter to students and the greater geology community addressing racism in the geosciences and the department's commitment to equity, diversity and inclusion.
- **Geology Minor course requirements (AY19-20; 3 hours)**
  Proposed revisions and helped modify the Geology minor requirements to streamline the course options.
- **Welcome breakfast for incoming graduate students (Fall 2019; 2 hours)**
  Co-organized and attended the breakfast with Dr. [redacted] to welcome new and current graduate students to the department.
- **Participated in Women's self-defense course (4/23/19; 3 hours)**
  Attended this event that was sponsored by Cal Poly Humboldt Police Department. I invited all of the women in the department (undergraduates, graduates, staff, faculty) and encouraged them to participate. Several students said they would attend and then backed out last minute. Completed the course with Dr. [redacted] and [redacted].
- **Geology Club advisor (Fall 2018 to present; 10 hours per AY)**
  Advised Geology Club officers in club events and fundraising, approved club purchases.
- **Updated and retrofitted of Founders 14: The Paleoclimatology Lab (AY 17-22; 50 hours)**
  The lab now has new floors, new counter tops, freshly painted walls & and an exhaust hood. Additionally, I have equipped the lab with a muffle furnace, drying oven, numerous scales, a large cooler for mud core storage and a Magnetic Susceptibility meter. Additionally, I maintain and supervise the use of this space.
- **Contributed to and have maintained a presence on the department's social media.**
  I have contributed to the annual department newsletter every year, updated my own website that is linked on the department's webpage and regularly post updates and photos on the department's Instagram page, which has ~350 followers. (See 3-30-2022 Instagram post example and link to personal website) (AY 17-22; 7 hours)

*Guest Lectures/Assisting in department colleague's courses*

- **Guest Lecturer in GEOL 486 - Geology Research Methods x2; 4 hours.** Lecture #1: [redacted] (For class visit 2/22/22 see 9/18/22 letter from [redacted]). Lecture #2: Led a small group discussion on a seminal paper in my field ([redacted], 2005) and the importance of the Younger Dryas abrupt climate change event (2/18/19).
- **Guest Lecturer in GEOL 303 - Earth Resources and Global Environmental Change; 2 hours.** Title "[redacted]" (12/1/21)
- Presented at the Department of Geology Colloquium at Cal Poly Humboldt in October 2020 entitled "So you are thinking of applying to graduate school", where I explained the process of applying to graduate schools to ~20 students (10/12/20; 5 hours).
- **Served as panelist in mock job interviews for students in GEOL 465 - Geosciences Senior Project; 3 hours.** (December 2018, 2019, 2020).
- **Guest Lecturer in GEOL 103 – Water Planet x2; 6 hours.** Lecture #1: Glaciers and Ice Sheets (3/18/18) and Lecture #2: Glaciers and the Water Cycle (2/27/19).
- **Field Safety in GEOL 524 - Methods in Geochronology; 36 hours.** Joined Dr. [redacted] weekend field trip to Granite Peak, CA of ~10 students. Served as safety/first aid for this strenuous hike to collect bedrock samples. Hiked with and monitored a student struggling with underlying health issues. Hiked down the mountain with him and brought him to the Weaverville emergency department when his symptoms worsened (9/23-9/24/18; Section 6A Dr. [redacted] letter dated 8-18-20)
- **Invited Speaker in GEOL 455- Department of Geology Colloquium at Cal Poly Humboldt; 1 hour.** Pop-up talk Title "[redacted]" (2/12/18).
- **Invited Speaker in GEOL 455 - Department of Geology Colloquium at Cal Poly Humboldt; 5 hours.** Title "[redacted]" (10/9/17).
- **Guest Lecturer in GEOL 109 - General Geology; 4.5 hours.** Glaciers and Climate change (11/27/18).
- **Guest Lecturer in GEOL 700 - Finding Faults; 4 hours.** Field trip at the Mad River Slough (10/28/17; 4 hours). Demonstrated for a group of ~15 students how to use a gouge corer, assisted students recover cores of the marsh mud and make interpretations of the stratigraphy, brought gear back to Cal Poly Humboldt, washed it and put it away.

*Department committee service*

- **Advisor & MS Committee Member [redacted], (AY 21-22; 10 hours)**
  Thesis title "[redacted]", expected graduation December 2022. Note: I counted this in my PDS as service, and not as scholarship or teaching, because I took over as [redacted] primary advisor, despite the subject matter being out of my area of expertise, in January 2022 when his original advisor left Cal Poly Humboldt. I supported [redacted] through his writing of his thesis and his thesis presentation as well as oversaw his committee meetings.
- **Chair, Search Committee for Tenure-Track Faculty in Lithospheric Earth Processes, (AY 20-21; 90 hours)**
  Led hiring committee with two other faculty members. My duties included writing the job advertisement and working with APS to choose appropriate sites on which to disseminate it, reading and analyzing 49 applications, coordinating online initial interviews with the top 7 applicants, ranking candidates based on their strengths and weaknesses, organizing online campus 'visits' with the top 3 applicants (meeting individually with department faculty, staff, students, CNRS Dean, APS and giving a combined research/teaching talk to the department), contacting references for the top 3 applicants, as well as regularly updating and communicating our progress with CNRS Dean [redacted]. Culminated in the successful hiring of Dr. [redacted] who started in August 2021.

- **Member, Search Committee for Visiting Professor in Petrology, (AY 19-20; 35 hours)**
  Served as committee member and as equity advocate. Took equity advocate training and anti-bias in the hiring process training. Read 11 applications, participated in Zoom interviews and teaching demonstrations for 3 finalists, calls to 10 references (total) and the deliberation process. Resulted in the successful hiring of Dr. [redacted] who joined the department faculty for AY20-21.
- **Member, [redacted] Scholarship committee (AY 17-20; 6 hours)**
  Revised the advertisement for applicants, evaluated the student applications for the scholarship, met with committee members to discuss the applications and made recommendations.
- **Member of Department Scholarship committee (AY 17-22; 5 hours)**
  Assisted with writing the call for applicants, evaluated student applications, met with committee members to discuss merits of applications and determine scholarship funding amounts for each student applicant.
- **MS Thesis Committee Member: [redacted] (AY 20-21; 15 hours)**
  Thesis title [redacted] (See 5-11-2021 email acknowledgment from [redacted] thesis advisor [redacted]).
- **MS Thesis Committee Member: [redacted] MS thesis committee (AY 20-22; 10 hours)**
  Thesis title [redacted]" (thesis advisor Dr. [redacted]).
- **BS Thesis Reader for [redacted] (AY 17-18; 4 hours)**
  Title "[redacted]"
  (thesis advisor Dr. [redacted]).
- **BS Thesis Reader for [redacted] (AY 17-18; 4 hours)**
  Title "[redacted]"
  (thesis advisor Dr. [redacted]).

**Service to the University (Section 9B)**

- **Committee Member: Planning Committee for Research, Scholarship and Creative Activities (PCRSC)**
  Appointed in August 2022 for a 2-year term (AY 22-24). (See 8-24-22 email from [redacted].)
- **Faculty co-Chair (AY 21- present) and Committee Member: Humboldt Advisory Committee Sustainability (HACS) (AY 20-present; 30 hours)**
  Attended monthly, hour-long meetings, where we have reviewed campus sustainability plans and provided recommendations of how the university can incorporate sustainability into their core operations. Additionally, I have co-led the Food Working Group within HACS, which has also met monthly for one hour. In the past two years the Food Working Group has supported the efforts of other campus groups to organize/highlight an edible campus. More recently, we have been working with Chartwells (campus dining service) to join the Food Recovery Network distributing leftover food from campus events to the surrounding community. **Starting in September 2021, I became the Faculty co-Chair of HACS**, working with [redacted] (staff co-Chair) to facilitate meetings, organize agendas, and write correspondences to the Provost and other entities on campus.
  (See appointment letter dated 7-23-2020 & 9-6-2022 [redacted] and [redacted] letter in Section 6C.)
- **Committee Member: Climate Action Plan (CAP 2.0) Transportation Committee (AY 21-22; 6 hours)**
  Met regularly to make recommendations on the Transportation section of the CAP 2.0 and reviewed the final draft of the CAP 2.0. (See 9-6-2022 [redacted] and [redacted] letter in Section 6C.)
- **Member of Teachers 4 Social Justice Professional Learning Community (Spring 2021; 24 hours)**
  Met bi-weekly for 1.5 hours with the other members of the learning community where we discussed students' progress through the first-year learning community and the book 'Teaching to Transgress' by bell hooks. (See 5-19-2021 letter from [redacted].)

- **Member of the Humboldt Unlearning Racism in the Geosciences (URGE) Pod, (Spring 2021; 40 hours)**
  Actively participated in this intense 8-week program which consisted of weekly hour-long meetings, reading at least two papers, watching video interviews and collaborating on deliverables (due on a weekly basis) with five other pod members. (See link to Humboldt URGE pod site.)
- **Organized viewing of the documentary 'Picture a Scientist' (October 2020; 10 hours)**
  Facilitated the distribution of this award-winning film, which highlights the harassment, discrimination and gender and racial bias that women in science have experienced. Approximately 100 people in the university community watched the film during the viewing period which lasted 4 days. Since this viewing occurred in Fall 2020 when we couldn't congregate in person, I created a Google Jamboard where viewers could post their responses and reflections of the film. (See 10-6-2020 film advertisement and 10-30-2020 Jamboard responses.)
- **Guest lecturer in SCI 100 - "Stars to Rocks" class (AY 17-21; 3 hours).**
  Gave an informal presentation to ~30 students about my career and how I became a geologist (10/8/21, 9/23/20, 10/4/17).
- **Participated in 'Fall/Spring Preview' (AY 18-19 2x, AY 19-20 1x, AY 21-22 1x; 6 hours total).**
  Met with prospective students and their parents and answered questions about the Cal Poly Humboldt Geology Department.
- **CNRS Faculty Representative on the Advisory Committee for the Center for Community Based Learning (CCBL) (AY 20-22; 8 hours).**
  Met twice per semester to discuss community-based learning opportunities for students. (See appointment email dated 2-21-2020.)
- **Guest lecturer in GEOG 357 – Climate, Ecosystem and People (October 2019 & 2021; 8 hours).**
  Introduced students to glaciers and climate change on long time scales and discussed modern climate change issues with students. Approx. 20 students in attendance each time. (see [redacted] letter in Section 6C & email invitation for 2021 guest lecture in Section 9B).
- **Orientation for new & transfer students (August 2017; 3 hours).**
  Met new and transfer students, introduced them to the Geology Department and our curriculum and answer any questions they had about our department.

**Service to the Profession (Section 9C)**

- Reviewed proposal for the NSF Paleo Perspectives on Climate Change program (Completed 2/3/22; 4 hours)
- Reviewed manuscript for Journal of Geophysical Research (Completed 11/2/21; 4 hours)
- Reviewed manuscript for journal "Boreas" (Completed 12/23/20; 8 hours)
- Reviewed manuscript for journal "Boreas" (Completed 2/21/20; 8 hours)
- Reviewed manuscript for journal "Geology" (Completed 3/14/19; 8 hours)
- Reviewed manuscript for journal "Paleoceanography & Paleoclimatology" (Completed 3/18/18; 8 hours)
- Reviewed manuscript for journal "Global and Planetary Change" (Completed 2/28/18; 8 hours)
- Reviewed manuscript for journal "The Holocene" (Completed 1/28/18; 4 hours)
- Co-convener December 2017 American Geophysical Union Fall Meeting. Session title "Ic[redacted] (Session C11B) (10 hours)

**Service to the Community (Section 9D)**

- **Pacific Crest Trail Association (PCTA) Communicator Magazine (Spring 2022; 20 hours)**
  Wrote an article aimed at a public audience on my 2021 field work in the Klamath Mountains. (See article 'Spring 2022 PCTA Communicator')
- **Participated in the "Skype a Scientist" program (4/26/21; 4 hours total)**

I skyped with middle school teacher [redacted] and her 7th grade student, [redacted]. I shared with them photos of fieldwork and we discussed why studying glaciers is important. (See email correspondence 4-29-21.)

- **Informal pen pal program: Glacial Geologists and students (Spring 2021; 4 hours total)**
  Exchanged letters with two middle school students from Virginia. I shared photos from Greenland and described some highlights from fieldwork seasons. Organized by Dr. [redacted] at the University of Virginia.
- **Participated in the "Scientist in the Classroom" program (AY 17-19; 20 hours)**
  For two years I was assigned an 8th grade student mentee from Sinagua Middle School in Flagstaff, Arizona. We corresponded over email on a weekly basis where we discussed glaciers, climate change and careers in science, while I mentored them through a year-long class project. The program ended in 2020. (See completion certificate from 2018 and letter from student [redacted] about her experience working with me as her mentor.)
- **Guest Speaker, McKinleyville High School (2/15/18; 3 hours)**
  Gave a presentation about climate change to juniors in Dr. [redacted] "Theory of Knowledge" class. After linking the climate changes occurring in the Arctic with climate change experienced here in northern California, the students and I had a frank discussion about what they could do to curb current climate change. (See Dr. [redacted]'s letter dated 5-15-18.)
- **Knowledge Source for the Community (AY 17-present; 5 hours)**
  Approximately once per semester I receive emails from community members asking to identify rocks or fossils that they have found in the local area. I have responded to all inquiries using my knowledge of the surrounding geology.

Memberships (Supplement C)

- Geological Society of America
- Association of Polar Early Career Scientists
- Earth Sciences Women's Network
- Humboldt Women of Geosciences

Summary of Service

Based on the Geology Department's RTP Standards for Service towards promotion from assistant to associate professor (see Section 3), **I have earned an excellent rating**. I have achieved most of the goals within the "Minimum Essential" performance category, four goals within the "Good" category and two goals within the "Excellence" category (Table 6).

- Minimum Essential: I have contributed to 8 of the criteria #1-11: #1-6, 8, 10.
- Good: I have contributed to 4 of the criteria 12-24: #12, 14, 15, 21.
- Excellent: I have contributed to 2 of the criteria 25-34: #25, 30.

Additionally, in AY 20-21 and AY 21-22 I contributed to more than 120 hours of service beyond my normal professional duties and held service leadership roles at the department and university level (Table 5).