Program Review – Annual Program/Discipline Update

Administrative Response and Follow Up

Winter 2021-2022

Program/Discipline: **Geology and General Science**

SAC Chair(s): **Andy Hilt & Lalo Guerrero**

SAC Administrative Liaison (Director or Program Dean): **Ken Friedrich** (outgoing interim 2021-2022) & **Matt Glazewski** (incoming interim 2022-2023)

Other Dean(s) or Director(s):

Department Chair(s): **Tony Zable, Vicki Schroeder, Mike Mackel, Jim Schneider**

Date: **15 March 2022**

This section is for Administration to provide feedback.
To be prepared by Program Dean(s) and reviewed by Pathway Dean and AVPs.

Because this response comes to you during a transitional period, this response is a collaboration between Dr. Kenneth Friedrich (outgoing Interim Temporary Program Dean for Sciences), Matt Glazewski (incoming Interim Program Dean for Physical Sciences), and Dr. Alyson Lighthart (Pathway Dean for Sciences, Computing, and Engineering). First and foremost your deans who support geology and general science (G/GS) would like to acknowledge the time and effort that went into preparing this Annual Discipline Update (ADU) for PCC, which occurred on top of your primary / priority work of supporting your students through year 2 of a global pandemic. It is an excellent example of what an ADU should be, and you should be proud of your work on it.

Also, we agree that it would be very useful to have **pathway level and whole college level data available to you all for comparison purposes in the coming ADU cycle**, and are upvoting that here at the top of our response.

1. Strengths and successes of the program as evidenced by the data, analysis and reflection:

It is clear from your analysis that the G/GS courses have grown as a proportion of the classes that are successfully run at PCC. Clearly part of this is the development and rapid growth of the three newer lab-based science courses that are both broadly appealing to students (in their areas of focus) and accessible to students (in their prerequisite requirements). These courses--Geology of National Parks (G147), Volcanoes and Earthquakes (G148), and Global

Climate Change (G184)--have built a following over time in the approximately five years since their implementation. A fourth course--Astronomy (GS107)--was one of the few G/GS courses available online prior to the COVID pandemic, and it has experienced a possibly-related leap in enrollment in the last couple years since the onset of COVID. These enrollment growths seem to come at the cost of 200-level courses in geology, and of enrollments in the 100-level physics & chemistry courses. The G/GS recommendation to change the 200-level courses is a good one, and will be discussed later in this response. It makes sense that you continue to look closely at the future of geology courses in higher education, and continue to revise the breadth of course offerings as well as the specifics of the topics within each course.

It is excellent to hear that the four campuses are embracing the One College model in their scheduling of G/GS courses. This should go even better in this coming year, in part because we are trying to rearrange things within the physical sciences such that G/GS will have one faculty department chair (FDC) that is a geologist as soon as next year, and in part because there will be one interim dean serving only physical sciences, not split between both physical sciences and life sciences. So (if all goes as hoped, and please know there are a lot of moving pieces to make this work!) between a whole FDC and a whole dean, with luck you can expect more attention to your programs in the coming year. Please understand that this will require the cooperation of FDCs in at least three subjects across four campuses, and it is a work in progress.

2. Areas of challenge or concern, if any:

We recognize the implied irony of this sentence, and concur with every underlying bit of it: *We are not aware of any external influences that strongly affect recent enrollment other than the COVID-19 pandemic, volatile social and political situations, and catastrophic environmental events that have impacted our community.* Part of culturally responsive teaching is recognizing the experience of our students and responding accordingly, and this statement (however snarky the intent of it) does indicate that you are with your students in this in many ways, since COVID and world events have affected us all in an equally disrupting manner. Also, just as many of us in our professional circles have disproportionately experienced the effects of these last several years' turmoil, so have our students. The simple acknowledgement of this in relation to your students' experience is indeed an example of culturally responsiveness.

Related to this, you have data that shows students are less successful in their science lab courses when they are taken online, and you have suggested possible reasons for that. Over the last two years, all of your courses have been offered remotely (which, though not the same as online, does carry similar challenges for students, including as you suggest both technology issues and less feeling of connection to the course). As we return to on campus teaching in the coming months, your deans would encourage you to explore ways to build belonging in your classes, to help students succeed in both face-to-face and online courses, and at similar rates. We encourage you to take time during your April SAC meeting to have a group reflection on what COVID has changed for in-person instruction permanently, and an evaluation of resources

needed to help adapt to our new future. If you bring us suggestions, it will be easier for your deans to support your initiatives.

Increasing belonging may have a positive impact on the success rate for your students of color, which are remarkably lower than for white students. Consider reaching out to the ESR SAC to have a synchronous (or potentially asynchronous) cross-SAC discussion one day about ways to encourage student success. This suggestion is in part because there is significant overlap in the subjects and approaches of ESR vs. G/GS, and in part because their success rates in ESR are astoundingly high across the board. There are of course fundamental differences, but there are also a number of things in common as well, including some faculty (Taryn Oakley comes first to mind) who teach in both SACs. Now that you are all in one pathway within One College, it is easier to see where there are synergies, and perhaps also easier to act on them as one.

We love the idea that your SAC will explore culturally responsive teaching with regard to course design. We appreciate that you seem to recognize that this is as much about having students be able to see themselves in the sciences (a mirror in your classroom) as about seeing the possibilities of sciences in their lives (more like a window to the world beyond). We also acknowledge that part of this work is also offering flexibility to students in how they meet the CCOGs. Also, please work with your new Interim Program Dean to explore possibilities for OER textbook development in G/GS classes.

Perhaps through the Unlearning Racism in the Geosciences (URGE) NSF-supported learning group that seven SAC members joined last year, there may have been new answers and ideas? This didn't come up in your ADU this year, but we hope you have discussed (or will discuss) this in your SAC meetings. We know that there are a thousand things that you need to do in each SAC meeting, and there is not time for thorough discussion of all the things. Perhaps before each SAC meeting you could collect from everyone their best thinking around any given subject (e.g. building belonging in the classroom, or social justice in geology, or grading for equity…?), that could be collected on a single document to share at the beginning of each SAC. Keeping B'JEDI (belonging, justice, equity, diversity, and inclusion) work at the center of your work will help keep it at the forefront of your reactions in the classroom, and will slowly help move the numbers in these annual updates.

Late in Winter term you were offered the opportunity to join a science-only cohort of professional development training around equity and inclusion. The goal of this training is to build a foundation to enhance our collective understanding of racial equity, in order to better understand and respond to racially-charged situations. If you are able to join this cohort, you will work with an excellent trainer to:

- →build a glossary of shared terms (something which I've recently come to discover we really do not have yet in the sciences, even when (or perhaps especially if) we think we do);
- →understand implicit bias, structural racism, and microaggressions;
- →understand our own power, privilege, and identity by looking at our place in the world through a variety of lenses; and

→understand oppression, and how it impacts us all.

We are particularly excited about that first goal of building a common language across the college and within our pathway. We hope that as all our faculty come together in understanding these concerns, we can also come together in making our classrooms a safer space for our students. If you are not able to join this cohort, please seek out other professional development around belonging, justice, equity, diversity, and inclusion, or watch your email for opportunities forwarded by your deans. Consider also reading this short article from the Chronicle of Higher Education about alternative approaches to high stakes testing (that coincidentally are plagiarism-proof!). Or check out How Humans Learn, by Joshua R. Eyler, which has a number of excellent science-related examples scattered throughout the text.

3. Reflection on goals and resources:

Your deans agree that G208 and G209 are problematic, and not only for the reasons listed in the ADU. Please work with your FDCs and with your incoming Program Dean for Physical Sciences to stop offering G208 and G209 by Fall 2022. It's been a year since you asked to phase it out, and you were encouraged to do so a year ago. At this point "phasing out" that class should be as simple as no longer offering it. It is clear from enrollment data over the last few years that students are less likely to sign up for these classes anyway. Please encourage students who do want those subject areas to take G148 instead.

You indicated that you would now like to explore adding a lab to the G207 course to change it to a 4-credit offering. That is a longer process that will involve curriculum committee, and that may also involve approvals at the state level. We do note that in last year's ADU you spoke of trying to keep it as the one remaining geology class without a lab, and we would like to know what changed in your thinking about this? In any case, we recommend that you stop offering G207 while you build a lab for the course and pass it through curriculum approvals. Likewise, we are curious whether you addressed your last-year concerns about the G201-202-203 series? For all of these courses, please work with your dean to explore the possibilities of expanding G207 to include a lab, and/or changing the CCOGs within the majors courses to better reach students.

Is there something that is stopping you from running your LAC assessment in Fall term, per your suggestion in your ADU? It sounds like a great idea. While it must feel like just another hoop PCC is asking you to jump through, the hoped for goal (besides accreditation, which we need to maintain in order to keep that second "C" in "PCC") is to make a difference in how you teach your students. If that difference can only be made and implemented by starting in Fall, please start in Fall. Please discuss this with your SAC during the April meeting and make plans for making this work better for you.

We want to acknowledge the part-time faculty for building and maintaining G184 for years now, and for their cooperative support for G148 as well. That is excellent work above and beyond, and it does not go unnoticed. We also want to acknowledge the clear need for a FT instructor to support the watery side of geology–climate change, oceanography, meteorology, hydrology, etc.

This is in keeping with your statements about the changing path of geology in higher education, and also with the very enlightening data that you offer about the ratios of FT faculty to SFTE for G/GS vs. physics in this pathway. ESR really needed that second position last year, as they've only had the almost-one for years now. G/GS has got to be next for new FT faculty hires.

We are excited for the return to campuses, and the concomitant return to the field that this will enable. As restrictions around COVID lift and as the pathway budgets are finally re-aligned, we will have a much better sense of what's possible. Your continued advocacy for field courses is appreciated, and we will figure out a way to better structure it into the new budgets, once we have them. We recognize that budgeting for vans would go a long way to bringing students to equity, as the current system where some students can make it to field sites easily and some cannot make it at all is markedly uneven. As budgets and COVID compliance rules change, we will keep field trips in the discussion going forward. Your incoming dean has ideas about intergovernmental agreements with other entities that manage fleets to see if an agreement can be made to share those resources at a cost that is much less than purchasing and operating our own.

Since we're on the topic of budgets, please know that we continue to hold the goal of getting the campuses to parity in their resources. To that end, we would like to share with you this spreadsheet to collect your ideas to better support G/GS across all 4 campuses, and help get us to truly be One College. Please as you have that conversation consider also that we have centers at Newberg and Hillsboro that would love to take on science classes, if we can find faculty in your SAC willing to teach them? Are there G/GS lab classes that are *not* materials intensive that might work there? Or could there be a portable set of lab supplies that could be moved from place to place? Does anyone in your SAC live near those centers, such that it wouldn't be a huge thing to ask you to teach there?

Finally, with regard to academic integrity and homework sharing sites such as Chegg and CourseHero, we recognize that there can be no single solution to this problem. The G/GS SAC is encouraged to engage with faculty peers, with the TLC, and with our online office to continue exploring assessment options that may look very different from those historically used to assess student learning. Assessments that are contextualized, especially if local and current, are less susceptible to Chegg or similar platforms and, in addition, these can engage students who may not easily identify as STEM students. Inquiries to PCC's legal team will be made by your incoming Program Dean to see if there are larger efforts that we can leverage in discussions with these private sector entities. Similarly, your new dean will reach out to other institutions that are battling this problem to determine if another course of action could be fruitful. In the meantime, please as always email your concerns about specific students to conductandcare@pcc.edu.

4. Recommended next steps:

_*_ Proceed as planned on program review schedule**

_*_ Follow up conversation needed with SAC, Dept Chair(s) and Dean**

Follow-up conversations are needed in order to bring many of your recommendations into reality. These conversations should include at least the Interim Program Dean for Physical Sciences and the Pathway Dean for Sciences, Computing, and Engineering. Based on upcoming changes in FDCs within the physical sciences at PCC, there is hope that next year there will be a single FDC to support G/GS.

5. Additional comments/questions:

We want to thank all contributing members of the G/GS SAC, and especially the part-time faculty who continually step up to make a difference for PCC, for your continued hard work in support of PCC students. We know these past two years have not been easy, and you have done great work in supporting your students and each other. Please always feel free to reach out to your Program or Pathway Dean for assistance as needed, as we begin our long-awaited transition back to campuses.