

I. General Information

Geological and Planetary Sciences Committee

Student Members

Sierra Petersen (Geochemistry '09) – Student Chairperson
Veronica Anderson (Geophysics '10)
Nathaniel Borneman (Geology '09)
Sarvesh Garimella (Planetary Science '11)
Marie Giron (Geology '09)
Alex Krikorian (Geobiology '09)

Faculty Members

Dr. Paul Asimow – Associate Professor of Geology and Geochemistry – Geology
Option Rep
Dr. Robert Clayton – Professor of Geophysics – Academic Option Chair
Dr. Andy Ingersoll – Professor of Planetary Science
Dr. Jennifer Jackson – Assistant Professor of Mineral Physics – Geophysics
Option Rep
Dr. George Rossman – Professor of Mineralogy – Geochemistry Option Rep
Dr. Alex Sessions – Assistant Professor of Geobiology

Pre-SFC Committee Meetings and Collection of Feedback

The committee of students and faculty met every few weeks from January to April. We put out a survey to all students in the department asking for feedback. The survey showed us that overall students were happy with the department, but there was still space for improvement. Through personal experiences of committee members and the results of the survey, we narrowed our focus to 6 key issues.

The SFC Meeting

Twelve faculty and fourteen students attended our meeting. Overall the ideas were received well by all in attendance. Faculty there agreed to help implement some of our suggestions, and the students voiced their support.

II. Issues Addressed

1. Course Website

- **Problem:** It is difficult to find course websites for GPS classes. There is no central location from which you can navigate to all the GPS course websites.
- **Solution:** We will link all the course websites through a single page on the department website. For example, the PMA department has all the websites

organized (and past years websites stored) in an easily manageable fashion. We already have a framework set up to accomplish this. There is a page on the department website that lists the courses offered each term for the school year. It has some websites linked already, but there are many links missing. Hopefully, any class that had a website would end up being linked through this main schedule.

- **Feedback:** Everyone seemed to agree that this would be an easy thing to fix. Many students agreed that the PMA department website is well organized and should be something we model ours after.
- **Implementation:** When Dian Buchness (department secretary) collects information about courses from the professors before the start of the term (for example, class times, rooms, field trip dates), she will also collect URLs of the course web pages. These will all be linked through the overall course schedule by Heather Steele, the webmaster. If a professor doesn't give a URL to Dian, Heather will send a follow-up email to try and get the URL.
- **Current Status:** Heather and Dian were consulted and they both agree this is a good idea, and an easy fix. Already I have seen an increase in the number of webpages linked through the main schedule. Hopefully previous years will be archived and future years will continue to have such a high turnout rate.

2. Course Catalog

- **Problem:** Some of the listings in the course catalog have not been updated for many years. The course descriptions do not reflect the material taught in the course.
- **Solution:** We should update some of the listings. Every time a new professor teaches a course, they will have to create a new course description (or at least re-approve the old one). Also, every time a new course is added, a new course description must be written. Finally, students will go through and pick out a few of the most out-dated course descriptions for immediate revision.
- **Feedback:** Although this is a minor problem, it is also something that shouldn't be too difficult to fix. Professors pointed out that this is mainly the result of laziness on their part.
- **Implementation:** The Academic Option Chair will be in charge of collecting new course descriptions from new profs/new courses.
- **Current Status:** The Option Chair has agreed to do this. Students have not yet selected the few course descriptions that need immediate revision.

3. New Students in GPS

- **Problem:** The department is often not notified in a timely manner that new students have switched in. This results in these new students having no one to answer their questions about the department.
- **Solution:** Set up a way for the registrar to immediately notify an appropriate party (either Dian Buchness or the Option Reps) when a student switches their major either in or out of the department. They would then follow a checklist of people to contact. First they would go see Dian to get their department shirt and be welcomed into the department. Next, they would meet with their Option rep who would assign them an academic advisor. Finally, they would go meet with that academic advisor. At this point they already know 3 people in the department who are there to help them with anything academic (or otherwise) they need.
- **Feedback:** A past geophysics option rep claimed he HAD been getting these notification emails. No other option rep was aware of them. We were also unclear on the timeline, whether or not the emails were sent in a timely manner. However, everyone agreed that it would be a good idea to set up a welcoming system for new students.
- **Implementation:** The registrar would contact Dian when any new student switched into the department. Dian would initiate the checklist of people for the student to visit. Dian, the registrar, and the Academic Option Chair are aware of their roles in this new checklist. The Academic Option Chair will make sure the Option Reps are following through.
- **Current Status:** After speaking with the registrar, we determined that the options reps SHOULD be getting notified within a day or two of a student switching into their major. It is unclear if the option reps are doing anything with these emails.

4. SURFs in the department

- **Problem:** Some students are having trouble connecting with professors to find SURFs. This is mainly difficult for freshman and sophomores, who haven't taken many classes in the department yet and who many only know one or two professors.
- **Solution:** Create easier ways for students to find projects and mentors by increasing publicity.
- **Feedback:** Faculty was hesitant to put effort into attracting people outside of the department because it would give students in the department more competition

for SURFs. However, others reasoned that these people from other departments can bring valuable knowledge (programming, ACM, EE, MechE) to our labs. Faculty also said that the reason they didn't post on the SURF Opportunities website is because they don't think of projects before a student comes to them.

- **Implementation:** We will begin by posting a blanket statement on the SURF website directing students to contact the Option Reps if they are interested in a GPS SURF. At the beginning of SURF season, Option Reps will collect a list of which professors in their area would be interested in sponsoring a SURF that summer. This would be a yes or no answer, not a commitment to a project.
- **Current Status:** I have been in contact with Candace Rypsi about posting a notice on the SURF website. The Option Reps are aware of their role in this new procedure.

5. Post-graduation preparation

- **Problem:** Many students do not know anything about non-grad school options after graduation. Caltech is excellent at sending students to grad programs, but there is little information or mentoring about industry jobs.
- **Solution:** Organize a way for students to get information about these other options. If there is enough interest, we could bring in a speaker from a large company to talk about job options. Also, a number of members of the department have worked in industry at one time or another, and may be able to give advice to students if they were put in contact with each other. Alums who have graduated from the department and gone on to industry should also be included in this list.
- **Feedback:** Faculty thought that not many of them have actually worked in industry, but that bringing in a speaker has been successful in the past. Students agreed that there wasn't much advice given about non-grad school options.
- **Implementation:** The Academic Option Chair can organize speakers to come in the fall term to talk to juniors and seniors (and anyone else who's interested). Also the Academic Option Chair can organize a list of current faculty and grad students who have worked in industry at some point.
- **Current Status:** Nothing much has been done on this yet because all the current seniors have already decided their future plans and the juniors haven't started thinking about it yet. Most of this progress will probably happen next fall.

6. Undergrad/Professor "tea"

- **Problem:** There is not enough interaction between professors and undergraduates on a casual level. Most of the times when this may be possible, there are also graduate students there dominating the conversation.
- **Solution:** We propose that once a year there be a social gathering for professors and undergraduates. This will facilitate networking and allow students to explore other sub-areas of the GPS department. It would be similar to the option teas thrown by the MOSH.
- **Feedback:** No one was opposed.
- **Implementation:** The Academic Chair and some seniors could organize this social event once a year.
- **Current Status:** Marie Giron and myself have discussed organizing this before the end of the term, but so much happens third term that it probably won't happen this year. We decided that early second term would be a good time (before SURF proposals are due).

III. Recommendations to Follow Up

1. Continuing Implemented Changes

In future years it would be beneficial to make sure that some of the changes we've initiated are being continued.

1. *Course Websites* – make sure they are still linked through a central location and that old websites are archived for future reference. If not, contact Dian Buchness or Heather Steele about updating the website.
2. *Course Catalog* – updating the catalog is a continuing process. You may choose some course descriptions that are the most outdated and bring them to the Academic Option Rep for revision.
3. *New Students in GPS* – check with Dian to see if the checklist is being followed and if the registrar has been alerting people promptly.
4. *SURFs in the department* – Verify that a notice is posted on the SURF website instructing students to contact an Option Rep if they're interested in a GPS SURF. Also, make sure that the Option Reps are collecting lists of faculty interested in SURFs to direct students to.
5. *Post-graduation preparation* – contact the Academic Option Chair about bringing in a speaker from an industry job, and also to compile a list of faculty (and alums) who have worked in industry and would be willing to talk to interested students.
6. *Undergrad/Professor "tea"* – Have some seniors work with the Academic Option Chair to plan this event.

2. Other issues

These issues were only briefly discussed and no conclusions were reached.

1. *Disparity between graduate and undergraduate grades in mixed classes* – Is it real?
2. *GPS Fringe Email List* – anyone who has ever taken a class in the GPS department would be on an email list so they can be notified about which classes are not being offered anymore and which new classes are being introduced instead. This is mainly for the type of information that has changed since the course catalog has been printed.
3. *Field Course* – This needs to be improved. Also, the number of students taking it has dropped dramatically.
4. *Ge11a/b Labs* – Students are complaining they take too long. We decided that depends on the group you work with, because some groups get out on time.
5. *Ge114 Underunited?* – Students spend more than 9 hours a week in class and lab and doing the homework sets and prelabs. Perhaps this class should change to a 12 unit class.
6. *Distribution of classes in second term* – This is hard to fix because GPS students take classes cross referenced with many other departments. Also, any class with a field trip would prefer to be first or third term, resulting in a deficit of classes during second term.
7. *Ge115* – students want to learn more rock-ID in hand sample. We feel by the end of our time at Caltech, we should be able to pick up a rock in the field and name it and know a general mineral composition.

IV. Appendix – Statistics and Survey Results

We got 15 responses (one of which was a repeat), so overall we surveyed 3 sophomores, 2 juniors, and 9 seniors (14 total). These students covered 6 of 8 houses. Each of the 5 majors was represented as follows: Geology (4), Geochemistry (1), Geobiology (2), Planetary Science (3), Geophysics (3).

Q: Do you think the workload gets better after core?

- 60% said Yes, it gets better, but only because you don't have to take classes outside of your major anymore.

Q: Do you feel you have adequate opportunities to interact with faculty outside of lecture?

- 67% said yes.

Q: Are you satisfied with your research experience at Caltech?

- 80% said yes.

Q: Which of the following do you think needs to be improved [about SURFs]?

- How students find projects – 6
- How students find mentors – 10
- Student-mentor interactions – 4
- Unit Space in curriculum for research – 5
- Thesis Opportunities – 2

Q: How happy are you with the GPS department overall?

- Very Happy With It (5/5) – 11
- (4/5) – 2
- No one answered lower than 4/5

When asked the follow up question 'Why?' people responded with the following reasons.

- Small classes, can ask lots of questions (4)
- Friendly and supportive environment (7)
- Great profs (8)

Q: Do you think Ge116, the new lab course, was a success?

- Yes – 6
- No – 0
- No opinion/Don't know – 7

Q: Do you feel like you have all the resources you need? (ie. Microscopes, copy machines, computers, lab space, etc)

- Yes – 11
- No – 1

Q: How do you feel about the research available to students in the department?

- Very good (5/5) – 9
- (4/5) – 5

Q: Are students finding adequate SURF projects?

- Always (5/5) – 3
- (4/5) – 8
- Sometimes (3/5) – 1
- No Opinion – 2

Q: Are the faculty welcoming about accepting students to do SURFs?

- Very Welcoming (5/5) – 4
- (4/5) – 7
- Kind of welcoming (3/5) – 3

Q: Is there a barrier to approaching faculty?

- Not difficult at all (5/5) – 3
- (4/5) – 7

- Neutral (3/5) – 3
- (2/5) – 1

Q: How are the course descriptions/information on the GPS website?

- Up to date, correct (5/5) – 2
- (4/5) – 3
- Decent (3/5) – 5
- (2/5) – 1
- No Opinion – 2

Q: What are your plans after graduation?

- Grad School – 8
- Industry/Career – 4
- Other – 1

Q: Do you plan to continue in a GPS related field after graduation?

- Yes – 11
- No – 0
- Don't know – 3

Q: Are there any areas of the geological sciences that are underrepresented? Are there subjects related to the Earth that you feel aren't taught? What areas would you like to see a new class in?

- Oceanography (2) , Meteorology (3), Environment (1)
- Sedimentology (1) - "there's only one class"
- Paleoclimate (2), Paleontology/Fossils (1)
- Geology/Mineralogy (2), Resource geology (1), Volcanos (2)

Q: Do you feel the classes are scheduled evenly between the 3 terms? Are there time conflicts? If so, which terms?

- Too few classes 2nd term (3)
- Too many classes 3rd term (3)

Q: Classes in need of improvement?

- Ge120 (2), underunited (1)
- Ge11b (2), Ge11c (1)
- Ge11a/b labs too long (2)

Q: Best classes in the department?

- Ge114 (3)
- Ge112 (2)
- Ge10 (1), Ge116 (1), Ge155 (1)

Q: Is the equipment used by students appropriate for the assigned work?

- Yes – 7
- Microscopes need to be tuned up – 4