Student Experience Conference: Follow-up Report

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With support from: The Academics and Research Committee

Published October 2008

Table of Contents

1 - Background

Motivation for the Student Experience Conference Follow-up Report

A first time Student Experience Conference (SEC) was organized on March 5, 2008 by the Academics and Research Committee (ARC), with support from the Associated Students of the California Institute of Technology (ASCIT), the Deans Office, members of the Committee on the Caltech Student Experience and Student Affairs, and the Interhouse Committee. During a three-hour block, over two hundred students, faculty, and administrators gathered together in Ramo Auditorium to listen to presentations by members of ARC and the Committee on the Caltech Student Experience and Student Affairs to discuss four major topics: Residence Life, the Caltech Syndrome, Teaching and Advising, and Student-Faculty Interactions.

Following the conference, students, faculty, and administrators were welcomed to continue discussing their feedback with ARC and to submit anonymous comments in a survey hosted on the Donut website (referred to later in the report by **OS**). Through the months of April and May, ARC committee members solicited more feedback from students in their houses through surveys and house discussions. Students were informed that their comments would be incorporated into a follow-up report. Houses that participated in these house discussions and anonymous online surveys: Avery (referred to later in the report by **AH**), Blacker (**BH**), Dabney (**DH**), Fleming (**FH**), Lloyd (**LH**), Page (**PH**), Ricketts (**RiH**), and Ruddock (**RuH**)*.

The questions posed in the online survey and house discussions were:

- ***Residence Life*** **–** Is the new Associate Dean of Residence Life a good or bad idea? Should all houses have a formal UCC system that serves as an emotional safety net for its residents? How would you like to see the role of RAs change? Does the house system encourage a culture of complaining and whining about classes?

- ***Caltech Syndrome*** **–** Is Caltech unnecessarily rough? Is there enough room for self-exploration and personal development? How can Caltech improve the academic environment and reduce stress on students?

- ***Teaching and Advising*** **–** How can we get students more engaged and come to class? What is the best method to get student feedback for courses during the term? What is broken about the advising system, and what's the best system for its oversight?

- ***Student-Faculty Interactions*** **–** How can we best utilize our low student-faculty ratio? What can we the students do to improve student-faculty relations, and what should the faculty do in turn to reach out to the students?

*More specific acknowledgements are indicated in the acknowledgements, located at the end of the report.

Background Information on the Initial Student Experience Report

The Committee on the Caltech Student Experience and Student Affairs, chaired by Vice Provost Melany Hunt and created by President Jean-Lou Chameau and Dean John Hall, prepared a report on the committee findings. The first main recommendation in the report, Commitment to Education, set the tone of the conference introduction. Faculty and administrator speakers noted that a major goal at Caltech is to take in extremely talented students; give them a broad, solid science education, through core and option requirements; and balance this curriculum with humanities and social science classes. Caltech has unique qualities, such as the excellent student-faculty ratio, extraordinary students and faculty, and incredible resources with which to accomplish this major goal.

A sampling of concrete improvements that the Report by the Committee on the Caltech Student Experience and Student Affairs accomplished as of March 5, 2008:

Institute Level Changes

- Brought in a new Vice President of Student Affairs, Prof. Anneila Sargent, who is a Caltech professor.
- Formed a trustee committee on the Student Experience with two students acting as Advisory Members.
- Formed a Core Re-Evaluation Committee to determine what students should be learning in core classes and how Caltech can best accomplish learning outcomes.
- The Council for Undergraduate Education is currently reexamining course uniting changes and brainstorming ways to improve advising and course feedback, including feedback at the middle and end of the term.
- Caltech professors seem more interested in student life and education.

Option Level Changes

Mechanical Engineering and Computer Science are developing groups that are similar to the Biology Undergraduate Student Advisory Committee (BUSAC) and the Caltech American Institute of Chemical Engineering (AICHE) to help facilitate student-faculty interaction within their divisions.

Model that BUSAC uses:

- Meet monthly to discuss the status of courses, ombudsmen, etc. in biology.
- Promote and facilitate communication between undergraduate students and the Division of Biology.
    - Gather student feedback (surveys, conversations, etc) and present it at biology faculty meetings.
    - Organize ombuds for all biology courses.
    - Host at least one social per term.
    - Provide student representation for the biology curriculum committee.
- Organize a freshman information session to help freshmen develop their four-year plans.
- Award professors and teaching assistants (TAs) for excellence in teaching.

Model that AICHE uses:

- Offer chemistry/chemical engineering/bioengineering talks.
- Organize chemical engineering student-faculty lunches at the Athenaeum, especially for freshmen during their search for research labs.
- Provide general mentoring.
- Organize a talk in which the different chemical engineering tracks are discussed.
- Try to attend chemical engineering conferences as a group.

2 - Residence Life

Major Residence Life topics discussed in the conference and in the house discussions and surveys are related to whether there should be an Assistant or Associate Dean of Residence Life (ADRL), what changes should be made to the Resident Associate (RA) and Upper Class Counselor (UCC) roles, the house culture, and other changes that would improve student living environments. Discussion participants at the SEC were more in favor of having an ADRL than were the survey respondents and participants in house discussions. Many people need more information before they would be in support of an ADRL.

In Favor of the Assistant or Associate Dean of Residence Life (ADRL) Position:

The ADRL seems like a good idea. (LH x2, OS, PH x4, SEC) People used to be more involved in residence life (RAs, Master of Student Houses, etc) on a daily basis, acting more as a liaison with the house presidents, Interhouse Committee (IHC), and student affairs. (SEC)

The current Deans primarily look out for the well-being of students and resolve student conflicts, many of which revolve around residence life, given the centrality of the House system at Caltech. Considering how many residence life-specific issues that students bring to the current Deans, the ADRL is a much needed position. (OS)

Many students may feel like they are on their own in advocating for their needs. More should be done to form an emotional safety net for students. (PH x2, SEC) The ADRL would help bring Caltech back to a culture of involvement. First of all, the ADRL would ascertain that someone is always working at the ground level with students, which would help the ADRL see what students are experiencing at Caltech. The ADRL could use this information to then help make students' lives easier and better. (OS, SEC)

The ADRL would more specifically:

- Help resolve student conflicts in residence life concerns. (SEC)
- Help make sure that housing provides proper maintenance. (SEC) Students need someone to be on their side when housing starts charging for superficial damages in the houses. Such a person would ideally know enough about the individual house cultures to understand that not all houses want to maintain a perfect setup. (OS)
- Coordinate among the support network of UCCs, Health Advocates, the Counseling Office, and others. (SEC)
- Connect students with on-campus resources. (SEC)

One student voiced that the ADRL should not be given as a non-academic post. (PH)

Against the Assistant or Associate Dean of Residence Life (ADRL) Position:

The ADRL seems unnecessary because Caltech students do not need a centralized person whom they can seek for advice. (LH, PH x5, SEC) There are already people in administration and in the houses who advocate for students. (OS, SEC) Furthermore, students feel like they know how to take care of themselves with the information they gather by word-of-mouth and by taking initiative to find the

services they need. (OS, SEC) It is unclear that the ADRL will have the intended effect, particularly on the house culture. (OS) Students would need more information to feel confident that an ADRL is needed. (OS, PH x6, LH x3)

Proposed alternative solutions to having an ADRL:

- Create a wiki with the information about resources that can be accessed in the long run, which would be useful even if Caltech has an ADRL. (SEC)
- If the Housing Office were more responsible and proactive in taking care of students need, students would not need someone fighting for them since everyone would already be working with them. (OS, SEC)

Upkeep of the houses:

Students are concerned about housing upkeep, particularly the North House renovations and the stringent housing regulations.

If the North Houses are renovated, there are many lessons that can be learned from the problems with the South House renovations. Students are even more concerned that North House maintenance has been put off with the excuse that the North Houses will be rebuilt, but there is not even a date set for the renovations. The North Houses really should be redone, and soon. (SEC, FH)

Some students strongly oppose the stringent housing upkeep regulations. Not all houses want to maintain a sterile atmosphere and students in some of the houses are annoyed at the number of superficial repairs for which they are forced to pay. (SEC)

Upper Class Counselors (UCCs):

Not all houses have UCCs and there is no standardized UCC selection procedure. However, many would agree that Caltech students need an emotional safety net, especially younger students. (SEC, LH, PH x6) Students, even within the same house, are split between thinking that the UCC system works fine (PH x3, LH x3) and that the UCC system definitely needs to be improved. (PH x2)

Standardizing UCC Selection: Those in favor of standardizing the procedure for selecting UCCs (SEC, OS, LH x2) cite that in some houses the UCC selection process is just a popularity contest. The selection process should be overseen to reduce conflict. (SEC, LH)

Standardizing UCC Roles: Others ask that UCCs play a standardized role in the houses. UCCs in some houses need to be more active and their roles better defined, including that they report to someone. (RiH) If there is a standardized procedure, it should have minimal guidelines since the houses all have different personalities, cultures, and needs. (SEC, OS, LH x2) Or, if a house does not really want UCCs, they can just have the positions filled in name only, and each house can at least determine the level of safety net that is necessary for its culture. (LH)

Student Concerns: Some students are concerned that telling all houses to have a UCC system may sound like a nice bureaucratic solution but be impractical, and that instead the psychology of the problem should be examined. (SEC) Students do not appreciate unprovoked interference in their affairs. (PH) Students who do not utilize the UCC system are unsure that many other students make

use of the UCC system either. In some houses, UCCs serve as social coordinators or are mostly only used by new students, which seems beneficial but not mandatory. (OS, PH x4) Not all UCCs are helpful anyway and sometimes students are just better off looking on their own for upperclassmen from whom to get help. Students will get help from others who are good to talk to, whether or not they are UCCs. (PH)

UCC Training: There is at least mandatory training for UCCs (currently run by Helena Kopecky and Kevin Austin), even for houses that do not have a formal UCC program. This training is very useful and should be continued. (PH x2, SEC) There are basic tasks that every house UCC should know, which, for the most part, are included in the UCC training. (OS) Part of this training should definitely include a part about to whom UCCs can refer students if there are recurring problems or if the UCCs cannot handle all the psychological drama that happens in the houses. (PH) Since there is currently no training for UCCs off-campus there should be some people living in Marks, Braun, off-campus alleys, and the Del Mar and Chester apartments included in UCC training. (SEC)

UCC Perks: UCCs are underappreciated, and some students feel that housing should offer more perks for UCCs. (SEC)

Residential Associates (RAs):

The Committee on the Caltech Student Experience and Student Affairs proposed that the RAs be in communication with the Deans. (SEC)

It is difficult to have RAs in the cop and counselor role in which they are close to students and yet still part of the Housing Office. Such a role requires them to be enforcers and decide on issues such as how much to charge for damages. Students do not mind for the RAs to enforce major health and harm concerns, but their job has too many other pulls if RAs also have to determine damages. Even so, students do not universally perceive RAs as split between two roles; many find that the RAs are not extreme disciplinarians. (OS, SEC)

Students express mixed views about the role of RAs, the most common of which is that the RAs are fine as they are and are doing a great job. (LH x3, PH x13, OS x2) A couple students proposed that if RAs were more involved in student concerns there really would be no need for an Associate Dean of Residence Life. There should be a way to keep RAs involved since often they stop going to dinner and drift away from students. (LH, OS) Other changes students suggest are to give RAs more training in dealing with emotional and psychological well-being and to have the RAs be less of disciplinarians. (PH) The role of the RAs should vary depending on the needs of each house. (LH)

House Culture:

Students are split between thinking that the housing culture encourages complaining and that there are instead other factors to blame. (SEC)

The houses are to blame:

The house culture contributes to the Caltech Syndrome since complaining is infectious. Not only does the undergraduate house culture encourage complaining, it discourages optimism, happiness,

and pride in one's achievements. Some students are afraid to tell others in their houses if they get an A on a midterm or quiz or are afraid to talk about good classes. However, they feel it is easier to voice their feelings if they do poorly. People will even complain when there are others around them who seem just "too happy" even though at some other schools, such as Princeton and Oxford, students are more universally happy. (SEC) Changes to house culture should encourage people to build on each other's accomplishments, not to bring people down with complaining and bitterness. Students may come to Caltech for the quality of education and science, but then can become embittered just from listening to bitter upperclassmen. Freshmen are the key for improving the Caltech culture. (SEC)

The house system encourages a culture of complaining about courses and other parts of the Caltech experience. (LH x3) The role of ombudspeople specifically is based on encouraging people to complain within the house. (PH x3)

The House system homogenizes its members and can create academic performance problems, such as the downward expectation of academic performance in Blacker leads to low four-year graduation rates. (OS) Bitterness in the houses is passed down and perpetuates. (AH, BH, RuH)

The house system does encourage a culture of complaining because there is so much going on in the house that distracts students from their work, making it harder to manage time. (BH, PH) The house system reminds students that there is more to life than academics, sometimes spreading an anti-work, anti-intellectual attitude. The spirit of the house is often a "you should be social, don't do work" attitude and students have to make a choice between being a good student and being a good house member. (RuH) Then, people complain instead of trying to improve their time management skills. Caltech is easier for some students after moving off campus (PH), especially those who find the conformism, ritualism, and inter-house divisions are annoying (OS).

Even if the houses are to blame, they are worth it:

The house system might encourage a culture of complaining, but that is how students bond at Caltech. (OS, PH) The house does a mix of encourage students to complain and help them relieve stress. (LH) Bonding in the houses supports people through their class work, improving their academic performance and sometimes playing a critical role in helping students pass their classes. (PH x3) People would be more depressed without the social network in the houses. (BH)

The current system is a good one (there would always be complaining about classes), and should not be changed too drastically. (PH) It is unclear whether removing the housing system would fix the culture of complaining and unclear what alternative solutions might work. (OS, PH)

There are other reasons for complaining:

Students are not particularly encouraged to complain by the house system. (OS, PH x4) The house system only encourages complaining insofar as it gives students an opportunity to communicate with each other. (PH) House culture can help students bond, and even without the houses, students would complain. (SEC, PH x3, LH)

The classes, not the houses, encourage complaining. (OS, PH x2, SEC) Unnecessary core classes are a reason people complain about classes; complaining and whining is a way of ventilating stress. (PH

x3) It is not so much the fault of the house as the sense of pride that students derive from working hard and displaying they are working hard through their complaints. (LH)

The house system can be awesome. (DH, LH) In some houses, there is no pressure to overload and atmosphere in the house is not hinged on school/coursework. For instance, students are allowed to talk freely at dinner about school. (DH)

Social atmosphere between and within the houses:

Students should spend more time socializing outside of the houses; although, it may be difficult getting shy people to socialize more outside of the houses. (BH) Sometimes students are discouraged from interacting with others because of the cliques that form around them in the houses. (LH)

Facilities:

Students would like to be able to work out later but the gym closes at 7:30 pm on weekends, at the latest. On a similar note, the gym is in poor condition. ARC should conduct a donut survey to see what is the optimal time students would like the gym to stay open and gather feedback about student satisfaction with the state of the facilities. (SEC)

Students would like a new student center that has a lounge area for students, with an area for bowling and some fast food options. (FH) A wooden dance floor would also be useful for student events since students currently have to pay to use the one in the Avery Dining Hall. (AH)

3 - Teaching and Advising

Class Attendance

Professors enjoy teaching at Caltech, but there is still low class attendance. It is unfair to the professors who care about teaching and take it seriously when students generalize and say professors do not care about teaching. A couple bad examples unfairly ruin the teaching reputation around campus. Even when faculty want to make an attempt at improving their teaching, they do not always have the time to do so. Just as Caltech students are overworked, faculty actually have lots of research concerns to keep track of (their lab members, grant proposals, general funding, etc). However, it is particularly unfair when professors spend a significant amount of time putting together meaningful lectures and then students either do not attend or attend without paying attention. Thus, a major issue is how Caltech can encourage students to come to class and to remain engaged in the lecture when they do attend. (SEC)

To reach a solution, it is important to consider why students choose to skip some lectures. Low attendance could indicate that lectures are not as effective as they should be. Students gave numerous explanations for why they do not come to class, which include:

- Students are often swamped with homework and do not have time to attend class or even read the book, which results in a "domino effect" in which they do not learn the material from the lectures they skipped, and suffer on the next problem set, etc. (LH x2, OS)
    - One root of this problem comes from students' poor time management and study habits. Students need to be taught to take a reasonable load and to study effectively. This is especially critical since most Techers breezed through high school and did not ever have to study. (OS)
- Under-uniting for classes can make, what seems like, a reasonable number of units unmanageable. (BH, OS) There could be dynamic uniting based on the honor code reporting of how many hours students spend on the classes. Units for courses could be based on five-year averages of data. Classes should be allowed to be fifteen or more units, if that much work is assigned, so that students can focus on difficult classes without underloading. It is currently allowed for some very difficult classes but not the convention. If units are increased to reflect the actual amount of work in each class, the overloading limit should be increased also. Some students do not want there to be a cap on overloading whether or not these changes occur. (AH)
- When lectures are boring, incoherent, or incomprehensible, they seem like a waste of time and students will not attend. (OS)
- Students do not go to class if there is a better way for them to get the information. (LH)
- Students more frequently attend their upper division classes, courses that are more relevant to students' course of study and in which class size is smaller. (LH)

An oft-repeated comment is that improved teaching quality would increase student attendance in lectures. Even when the material is not as interesting, as long as the professor is good, students will want to go to class and vice versa. (OS x2) Teaching advice that students give includes:

- Professors who are actually passionate about what they are teaching, and who are able to demonstrate that enthusiasm during their lectures, are necessary in order to engage students.

(LH x3, PH x5) For some professors it is obvious that they care more about their research than about teaching. (DH) It is motivating when professors instead teach with an attitude like "I am training the future scientists and engineers of the world." (RuH)

- Teaching style can sometimes be incoherent in lectures, where sometimes lecturers say a lot and do not write very much on the board, or if they do write on the board, the writing is non-linear or not very logical. Maybe faculty need guidelines for lecturing, which could be addressed in teacher training. As a means of teaching quality improvement training, maybe if professors were videotaped during a lecture or two, some of them would see why they need guidelines for lecturing or what they could improve. (SEC)
- All classes, even required classes that are not so popular, should be taught as if students really care about the material; it will help increase student interest. (BH)
- Professors should attend lectures given by professors who win teaching awards or are given positive feedback on TQFRs since they can learn a lot from faculty that students rate highly. (BH, SEC) Have professors who are rated highly on their teaching in surveys, etc. mentor new faculty or faculty who receive poor scores on the surveys. (SEC)
- Professors should try to understand that even though Caltech students are "smart", some of the material is still really difficult to learn and takes longer to comprehend. (OS)
- Professors should give more examples in lecture that will more specifically help in doing coursework. Professors may perceive that giving examples limits students' learning on homework, but students feel that these hints are necessary. (OS x2, SEC) Some students however want less focus on details and more on broad ideas; there could be supplemental talks given on big ideas. (AH)
- Students may be more involved if the professors become more involved in student lives. (OS)
- Caltech should make teaching an important part of the process in promoting and tenuring professors, or at least find a way to increase the rewards for better teaching. (OS, SEC)
- If students feel like the lecture material is particularly relevant to other course work (supplements the textbooks and helps on the homework) or interesting to them they will attend lecture. (AH, FH, LH, PH x7) Professors should focus less on giving information about their own research and more on giving information that the students really need to learn. (LH) Students will also have more perspective about the relevance of courses if professors clearly state the objectives of each class against which students can compare what they are learning. (AH)
- Students really want lecturers to do more than regurgitate material from the book. (AH, PH x2) Attending class feels useless when professors just copy material out of the book. (AH) However, sometimes the repetition is necessary for learning and faculty going over the material can make it clearer, but that should be the aim rather than the side effect. (AH) Professors can give the same material but with a different angle so that the repetition goes beyond regurgitation. (AH) It is also nice if faculty have a theme or main topic for the lecture and still give some interesting tangents. (PH)
- Classes should be more self-contained if the upper division classes are not going to build appropriately on the prerequisites offered at Caltech. (BH)
- Faculty actually offered the suggestion for improving teaching quality that students should boycott certain classes until they are improved. However, Caltech students have been trying to boycott Ch 3a for a long time, but now the Registrar's Office is automatically signing certain students up for Ch 3a. (SEC)

Students have other suggestions for improving class attendance, which are:

- Organize classes more like seminars or like humanities classes in which there is opportunity for discussion. Incorporate interactive demonstrations into the teaching. (BH, LH, OS, SEC) For instance, students could read papers and work as a group through material with a grade breakdown that depends on class participation. (BH)
- Adjust the work load:
    - Classes with reasonable problem sets, maybe even assigned weekly, promote effective learning. (OS)
    - Give students difficult enough work that they need to come to class, but at the same time, leave them enough time to actually do the work and not have to miss class. (PH)
    - Faculty are too concerned with diluting material that they do not realize what is reasonable to be teaching. Some physics students feel that professors in physics do not appreciate teaching the material as much as getting through it. It is difficult for professors to determine what they can leave out, but students appreciate it when professors make the effort. (RuH)
    - Take home exams are not a license to load up unlimited time or high hour count exams. They should be used as a way to give problems that every person has the ability to solve with adequate preparation, making time not an issue. (OS)
- Professors should not post complete sets of notes online. Maybe instead they should post notes that have blanks in them for students to write down some short phrases and equations during lecture. However, students ask that professors do not post notes with complete pages blank since that forces students to scribble frantically during lecture rather than also processing the lecture material. (OS, PH x2) Furthermore, some students are concerned that having incomplete notes online would punish students for being ill and having to miss lecture (AH), and some schools, such as Stanford, automatically tape lectures, giving students access to more materials than just lecture notes. (AH)
- Make attendance part of the grade somehow, possibly by:
    - Implementing small in-class quizzes that are given somewhere between every class period and every other week. These should be easy enough that they boost student morale and help students stay on top of the material rather than being so challenging that students stress so much about the quizzes they do not have time to work on course assignments. (LH, PH x2)
    - Offering credit for participation. (PH)
    - Offering some other incentive for attending lecture. (PH x2)
- Have classes later in the day. (PH x4) If students have to work late at night it is difficult to wake up for early classes. (AH)
- Decrease class size. (PH) Small class sizes allow more interaction between the professors and students. (AH) An ideal class size is 15 – 20 people for having nice discussions. It is a problem though when classes that small are taught as if there are 200 people in the class. (BH)
- Having good teaching assistants can make a big difference. (BH) There should be a better system for fixing poor teaching done by teaching assistants. (RuH) A good TA is someone who is reasonable to talk to with concerns about the class. Undergraduate TAs are wonderful (BH, FH), but sometimes it is difficult to find qualified undergraduate TAs. Bi 1 solves this problem by having undergraduate and graduate student TAs paired together. It is easier to approach undergraduate TAs than graduate TAs and professors. (BH)

- Do not organize classes during dinner, unless in an organizational meeting students say that is what they want. Psy 20 was held during dinner. (BH)

Some students question why encouraging students to go to class is a priority. Some students learn better from a book, or at least find book learning more convenient and efficient. Even departments that have high teaching quality are not guaranteed to have good attendance or that students learn effectively in class. Some students prefer to learn from a book because they learn better at a slower pace. (OS x2) Some say that attendance would have to be mandatory in order to get a significant increase in attendance, and there are classes in which this would be unnecessary punishment. (PH x2) Students should be allowed to choose whether they want to attend class or not. (PH) It is important to consider that students do a lot of their learning on their own or with peers, both of which are learning contexts that help one become a lifelong learner. (RuH)

Students and faculty at the conference voiced concern that even when students come to class, many are not engaged in the learning experience such that even when professors ask students if they have questions or pose questions to the students, they are met with blank faces. (LH, SEC) Furthermore, it is disrespectful when students come to class only to fall asleep. (AH) Comments that students have in response to this perceived lack of engagement are:

- It is really difficult to maintain attention in classes that are more than 2 hours at a time. (LH**)**
- Students do not speak up in classes since they are concerned over looking stupid, or generally feel uncomfortable speaking up. (SEC) Also, students do not want to ask questions that slow down the professors who normally finish late, or at the last minute, since those questions push the lectures to overtime. Or, they feel like their questions would interrupt the flow of lecture. (SEC) If they know they can ask TAs lots of questions in a less formal environment, they will ask the TA rather than interrupting lecture time. (RuH)
- There are lots of lectures on the board with students not saying anything during class, even when they do not understand. It would be helpful to make the lecture environment less intimidating. Faculty are concerned however that some students seem like they do not even want to be bothered, which could reflect the diversity in learning styles of Caltech students. (SEC)

One major classroom concern that students have is related to classes that have a mix of undergraduate and graduate students. Students would like professors to be aware that undergraduate and graduate students have different overall workloads. Undergraduates perceive that graduate students have more time to work on difficult sets and unlimited time or extremely long take home exams since they are taking fewer classes. (OS, SEC) Even though undergraduates recognize that graduate students still have their research, many feel it is unfair to be graded on the same scale as graduate students. (SEC)

<u>Office Hours</u>

Some professors have stopped offering them since Caltech students do not show up. At other universities, there are lines outside faculty doors for office hours sometimes. (SEC)

Timing: Well-timed office hours are critical. Students often prefer to have at least some office hours scheduled the day before the problem set. Or, if homeworks are due in the afternoon, then a morning

class could have office hours immediately following lecture; please note this could be a problem when students have another class immediately following the other class. (FH, LH) With a big workload and regularly scheduled all-nighters, students can barely schedule office hours time. (LH, SEC) It is ironic though that students will still ask for letters of recommendation (e.g. for SURF) from faculty with whom they barely talk. (SEC)

Encouraging Office Hours Attendance: One class had required office hours, at least once in the term, for students to give feedback on how the class is going. This would work in small classes but not necessarily in the large ones. However, if professors started out the class each week, or twice a term, explicitly saying they hope students come by office hours just to introduce themselves and chat, it would go a long way. Even though this won't cause a line of 20 students outside office hours, it would establish the professor as really interested in the students, and remind students that are not just a formality but a time during which faculty really want to interact with students. Repetition of this sentiment throughout the term could result in students actually coming by. The introductions could lead into classroom feedback and ultimately, give students the opportunity to ask questions that they wanted to ask but never had a 'chance.' If students are reminded that they do not have to have a brilliant research question in mind in order to approach a professor, they are more likely to take advantage of office hours. (SEC)

Course Feedback

There should be a lower barrier for giving course feedback. Students need to give their feedback as soon as they have feedback. It is too late to wait until the end-of-course evaluations come out. Thus, even though the TQFR is nice, it is not always helpful to wait that long for feedback. (SEC) If students go to class more often, they would be able to provide more feedback, such that improving teaching quality could indirectly improve the feedback gathered. (PH) Sometimes even the students who attend class do not share their complaints with faculty since they just want to complain and not share the complaints with faculty; however, through increasing student motivation for sharing their feedback these "complaints" could be used to shape the direction of the course. (DH)

Increasing Frequency of Gathering Feedback: Faculty could ask for course feedback in the last 5 – 10 minutes of class every other class. They can ask pointed questions to generate honest discussion regarding whether the course seems too easy, too hard, etc. In some cases, it may be necessary to find ways of reducing students' fears that saying a course is too tough or easy may be received negatively among their peers or even by the professor. In any case, faculty should try to get feedback at multiple times in a course. (PH, SEC) At a minimum, there should be midterm surveys, which could be handed out with a midterm or problem set. (FH, PH) It is even helpful to have mini-surveys, such as asking students to write on their problem sets how long it took them to do the set. Surveys could also be available in class. (FH) Faculty can encourage both positive and negative feedback, as both should be helpful in improving courses. (RuH)

Increasing Student Motivation for Providing Feedback:

Feedback would be improved by implementing incentive structures. On example is to make feedback mandatory, maybe by not giving a student a grade unless the student provides feedback. (FH) However, there are milder methods of offering incentive for providing feedback such as having a problem on the homework set in which students write down everything that they did not understand or by giving extra credit on homework for providing feedback (PH x2, SEC) Feedback

would be more readily given if students are bribed not with raffles but actual, concrete rewards that students are guaranteed to receive. (OS)

Sometimes students are worried about anonymity with feedback that if you try to give feedback in the middle of a term, it is difficult to do so knowing that your name will be on it. There should be anonymous feedback forms online for all courses, available on course websites, and/or student comment cards. (PH, RuH, SEC)

Evaluations do not always reflect the problems in courses so students need to make sure that feedback gives a clear picture of the problems in courses. Sometimes comments are just too vague. (SEC) To improve the feedback in TQFRs, students need more clear information on how the survey information is used and who looks at the survey feedback so they can feel like their feedback is more valuable. (FH) Students should be able to have confidence in providing feedback that it will be seriously considered. Seeing that year after year the same courses are receiving the same feedback and yet not doing anything to fix the situation makes it seem pointless to provide the feedback in the first place. (SEC) Student feedback during the term works well when the professor makes it clear that he/she is gathering feedback not just for the sake of gathering it but because he/she really values and uses that input to make course changes. (OS, PH x3) Sometimes even when student groups send faculty feedback, the faculty ignore it, an example of which is when faculty do not answer their e-mails. (DH)

Students themselves should value the changes that come about from their feedback enough to talk to faculty/TAs directly with their complaints. Students can send e-mails to professors asking for help or to post the solutions online; faculty are generally very willing to listen to student concerns and are more upset to find that students have complaints of which they are unaware. (PH)

Consolidating Feedback: There are many methods for providing course feedback that some students find it easy to give their comments. (PH) However, some of the feedback mechanisms should be consolidated. There are so many different mechanisms for gathering feedback (TQFR, CLUE, departmental surveys, etc) that could be streamlined. (FH, OS, RuH, SEC) Some departments, such as chemistry/chemical engineering, have their own course surveys that work well. (PH)

Ombudsmen: Ombuds should be centralized in all divisions. Even though the ombuds system is good for core, it is lacking or poorly organized in some divisions/options for upper division classes. For all classes, there should be ombuds meetings (SEC) and they should be held more than once a term so that problems can be fixed in the middle of term. (LH) Some of the ombuds meetings could be across courses (e.g., across first year core classes, across classes in a division) to see the context and universality of complaints. Sometimes students have two classes that are extremely demanding and neither the students nor faculty have perspective about what the standards should be in place to make workload between the two classes more reasonable. (SEC) Furthermore, there should be an adequate mechanism to make sure that feedback is acted on. (BH, LH, OS, PH, RuH) This is an issue that departments should handle. (DH)

<u>The 3:1 student-to-faculty ratio</u>

Students and faculty want to be able to take more advantage of the 3:1 student to faculty ratio in the classroom setting. Caltech relies more heavily on didactic teaching than what the ratio requires, and the Student-Faculty Conference 2007 found that the large classes need more effective oversight. It

should be possible to have more seminar or experimental classes, with greater student-faculty interaction, such as in Ph 11, where there is a research focus with direct interactions. Caltech used to allow students more control over the classes they took, offering particular classes at the students' request. The humanities department does this sometimes, but it is unknown how many others do. Maybe Caltech should aspire to have something more like the tutorial system in Cambridge. (SEC)

The Advising System

Students have a wide range of individual experiences in the advising system, such that some think there is nothing wrong with the advising system. (OS, PH x4) However, many would agree that the advising system is broken right now (SEC), and that advising is definitely hit or miss. (LH, RuH, SEC) The exact nature of the problem should be explored further. It can be so bad sometimes that people have even been asking humanities professors to be their science advisors. There are other extreme examples of trouble with advising in which students change advisers multiple times and still have not met a single one of them or when advisers go on sabbatical without informing advisees. (SEC)

Sometimes students are not sure faculty have a personal investment in students doing well. Advising is a required part of the job, but not all faculty are as comfortable or interested in being advisers as some of their colleagues. Some students waste a lot of time trying to hunt down their advisers and then have to leave add and drop cards with their advisers' secretaries since they can never catch their advisers in person (DH, SEC). Getting an add/drop card signed should only take 5 minutes, but requires a lot more effort than that. (OS) Some students have never met their advisers, (BH, LH) or if they do meet with their adviser the meeting only lasts as long as it takes to sign an add/drop card. (PH) Some students would like for their adviser to e-mail sometimes and check in with their advisees every now and then (FH, PH, SEC), while others are heavily opposed to that kind of babying. (SEC)

In response to the problem of having faculty who do not like advising, students and faculty suggest that:

- The barrier for switching advisers should be lowered. (SEC) Some are unsure whether it is difficult to switch advisers (RuH) and some say that people can switch advisers if necessary. (OS) When students choose their own adviser, they have a more positive experience. (LH, PH) Allowing students to choose their own advisers makes it difficult for students who do not know any professors in their department to determine who would be helpful. (OS) But, if there were an informal socials organized within departments at the time when students declare their options and need to find advisers, the students could meet potential advisers and have an easier time developing a preference for one in particular. (BH)
- The excellent advisers offer group-advising sessions so that students who are experiencing poor advising situations can still receive quality advice, in which case faculty should be rewarded for taking on this greater advising load. (SEC)
- The advising load is redistributed to people who actually like advising, in which case faculty should be rewarded for actually advising students. (SEC)
- Advisers be split into two groups: the easy to reach advisers should have the job of signing add/drop cards and approving schedules while other advisers should give advice about courses, graduate school, jobs, etc. (PH, SEC) Those who sign cards could take on many more students since that is an easier task. (OS)

- Students have access to a list of advisers who are actually interested in advising if there is no opt out mechanism for faculty to not be advisers. (BH) Good advisers will actually be there for their students, helping students work through academic concerns. Excellent advisers care enough about student concerns that they help students get internships and into graduate school and will even advocate on behalf of students when arguing for changes in the system. (RuH)
- Faculty who do a bad job advising, even those who enjoy advising but do not have the time for it, are not forced to advise. (AH, OS, PH x2) It really makes a difference when advisers are interested in helping out students. (RuH)
- Faculty who have long one-on-one sessions with students be rewarded to give other advisers added incentive to be more involved in their students' lives. (LH x2) Currently, even excellent advisers do not have much time to chat. (LH)
- Caltech find a way to make advisers accountable for the well being of their students. (PH, SEC)

Freshman Advising: First year experiences are crucial in forming a student's general perception of Caltech. Freshman advisers have the responsibility providing advice when it is most needed and are an integral part of the first year. Thus, they hold the power to significantly alter a student's Caltech experience. Freshmen should be educated about the role of the adviser so they can realize sooner what are reasonable expectations and when an adviser is not working for them. For instance, even though it would be nice if advisers helped people use their strengths to improve their Caltech experiences and tailored advice according to each students' abilities (PH, SEC), it is an unreasonable expectation for students to think that advisers can be motivators like athletic coaches. It is not as if they can tell someone to drop down and give ten when a student does not fulfill expectations. Some advisers do not show up to the frosh meeting such that some new students already start off with a disappointing advising experience. The advisers who do not show up to the first meeting should organize a meeting with their freshmen advisees. Not only should freshmen have a meeting with their advisers at the beginning of the term, either through the advising brunch or an alternate meeting scheduled by the adviser, students should also meet their advisers throughout the year. At least for the first term, freshman advisers should schedule bi-weekly to tri-weekly meetings with their freshman advisees. (OS, SEC)

Student-Adviser Interactions: Departments should organize teas or lunches for students to have the opportunity to meet their advisors in an informal setting. There is a morning brunch meeting for freshman advisers but no such informal settings for meeting advisers in a student's option. (FH) Furthermore, advisers should require students meet with them at least once a term; otherwise, students rarely see advisors beyond getting them sign an occasional drop card. (PH) It would be nice if advisers invited their advisees to lunch (PH). Students could also take initiative and utilize the Take-a-Prof-to-Lunch program to invite their adviser and the other advisees to lunch. (AH) Sometimes the students themselves are too lazy or intimidated to take initiative to meet with their advisers, but meeting their advisers in informal settings would encourage students to talk to their advisers about more serious matters. (AH)

Educating Advisers: Advisers should receive training, whether it be in the format of seminars and workshops or guides and resources, they should understand what basic standards make someone a good adviser. (BH, RuH, SEC) Such guides should include information about graduation requirements since many advisers, especially freshman advisers (RuH), do not seem to know much

about graduation requirements. (LH) This may be because they do not teach undergraduates or do not interact with undergraduates in the course of their research. (RuH) Advisers also need to be enough in touch with student concerns to realize when they should say no to students who want to overload. (OS, SEC) Some options really do not require students to ever overload, such as math and chemistry. (RuH) Faculty can encourage against overloading so that students can think more deeply about course topics. (AH) Because some advisers still allow unreasonable overloads, it may be beneficial to have a core scheduling committee to make sure they are of reasonable workload. (OS) Some advisers who let their students overload justify it by saying that if they do not sign the petition, someone else will. (SEC) Nonetheless, some students do not think it is fair for faculty to limit the number of units students enroll in if the faculty do not know enough about the student to really know if the student can handle it. (PH)

Advising Oversight: It is important to oversee the advising system in order to identify the specific problem areas and provide guidelines for advisers. There should be TQFR type feedback for the advising system (LH, SEC), or at least an anonymous feedback form that students can fill out about their advisers, particularly if their adviser is bad. (PH) Since it was confirmed at the SEC that faculty do read TQFR feedback this may be an effective way to encourage better advising and to let advisers know how they can improve. Also, students could use TQFR feedback to determine who they want to have as an adviser, in case they need/want to switch. (SEC)

Alternate Advisers: Students find it is much easier to ask an upperclassman in a student's option for advice because they are actually going through similar experiences themselves, while the faculty are not always in touch with graduation requirements and how to balance a workload to minimize stress in the long run. (PH x3) Other students are also much more accessible than faculty. Sometimes students do not need faculty advising since they already know what they want to do by the time they finally get a meeting with an adviser. (PH)

Adviser Accessibility: If advisers continue to be inaccessible, students would like to have electronic add/drop cards. Even if the point against having electronic add/drop cards is to make students talk to their advisers, they do not necessarily meet and talk anyway. On the opposite side, there could be implemented a feature that requires if a student wants to register for classes that have a conflict, they talk to their advisers. (DH)

4 - Caltech Syndrome

Students come to Caltech highly passionate, excited, and interested in science, but a significant portion of them loses that passion by the end. Students feel like their intellectual curiosity has been crushed out of them, which is a comment that prompted many in the audience to laugh and raise their hands in agreement. Students all thought that science is cool, but then sometimes in the structured classes students lose sight of the coolness, learning that science is not what they liked before starting at Caltech. Sometimes by the end, students want only to learn on a superficial level and graduate to get out. (OS, SEC) Even though these issues may not be unique to Caltech that does not mean they can be ignored. Although it seems to come from a complex set of aggregated factors rather than a single issue, the Caltech Syndrome is one of the top priorities that need to be addressed. (SEC)

As a quantitative gauge of the Caltech experience, exit survey results are not encouraging. In recent exit surveys, 40% of graduates have decreased self-esteem, and only about 60% would recommend Caltech to high school students like themselves (SEC), while many students are bitter enough to discourage premeds from coming to Caltech during prefrosh weekend. (RuH) These results prompt the questions “Why?” and “How can this be fixed?” (SEC)

Students are split between thinking that there is not enough room for self-exploration and personal development due to too much of a course load (FH, SEC) and arguing that if Caltech were unnecessarily tough, students would not find the time to play sports, play instruments in the orchestra, serve on committees like ARC/IHC, build Interhouse, and write for the Tech. Even though it is possible that those people who find Caltech more of a challenge do not have time to participate in outside activities but many Caltech students are involved in extracurricular activities. (OS, SEC) Many resources on campus, and the House system in particular, encourage students to explore interests outside of classes. Although classes take up the larger part of a student's life, they do not do so to the exclusion of everything else. (SEC)

Caltech As Unnecessarily Tough:

It is a widespread opinion that Caltech is unnecessarily tough; however, it is unclear how to fix this due to the complex origin of the phenomenon. (BH, PH x3) The expectations put on students both by themselves and their classes are quite often too high, making it a difficult adjustment to transition from the top of their high school class to the middle or bottom of Caltech. (SEC) Sometimes faculty do not realize how much homework they are assigning, many extension requests are denied, and some professors make students cry during oral exams. (LH) Students are concerned that they worked so hard to get their grades but then the real world will not understand what it all means. (LH) In several other classes, for example Math 1A, Caltech seems to try to weed out students from particular options. (PH)

Students take many more classes compared to other colleges and take more classes to satisfy their major than classes they may want to take for personal reasons or interest. Caltech could reduce expected number of units or other restraints that require students to largely study their major (PH), or if the expected number of units is maintained the same, it would help to remove the stigma around taking more than four years to graduate. (RuH) There seems to be a culture at Caltech wherein if students are not stressed it implies that they must not be taking enough classes. The pressure makes

Caltech appear to be unnecessarily rough/tough. (PH)

Many students feel least happy with Caltech when taking poorly taught classes, especially if these are coupled with hard work and even more if the load is perceived as unnecessary, because then on top of suffering through bad lectures, students feel stupid at not being able to do the problems. (OS, SEC) Oftentimes, classes make homework unnecessarily difficult which seems to be because Caltech has a reputation to uphold. There is no reason why students should so often be given exams where the averages are 50%; sometimes people need to actually understand how to do something instead of always going for partial credit. Furthermore, professors sometimes do not seem to understand how many other classes students have to take. (PH)

Some students are conditioned to sleep for only 4 – 5 hours a night. (RuH) It is particularly stressful that sets are due in the morning, as if encouraging students to pull all-nighters to complete the sets. (AH) Even when students take a term off, they still feel the same burn-out after the 7th week that other students experience. (RuH) Caltech is perceived as unnecessarily rough in the sense that the homework set structure makes it hard for students to try and work ahead or catch up once they fall behind. (LH x2) Students feel like they have to do problem set work every day in order to keep up with the work. Some students have a night every week that they know they will have to spend pulling an all-nighter in order to finish their work. (DH) Some students are too tired from schoolwork to go off campus (DH), or to use their free time productively. Students do not even have time to worry about whether they are happy, and there is a culture that pushes them to not take a break to relax while working. (SEC)

An example of how difficult Caltech can be is when students are expected to only spend six hours on a lab but have little to no prior experience with the techniques. (BH) Furthermore, chemistry labs limit the amount of time that students can spend in lab, however updates to technology are required to make this time productive; for example, there are not enough NMR and IR spectrometry machines for the limited time students are given in lab. It is a shame that to decrease the amount of time students spend in lab they are given less time for exploration and are instead working through cookbook labs. (RuH) There is often a big difference between the time students are expected to spend on an assignment and how long they actually spend on the assignments. (BH) Information is generally crammed into a short period of time. (AH, BH) It is unclear whether work should be reduced or units increased. (BH)

Despite a call for change, students do not want to sacrifice the rigor of their education. (BH, RuH, SEC) Students know that Caltech will be hard, that there will be hard standards, and even when it is hard at Caltech, we do not want the standards diminished or the rigor to change immensely as other things change. (SEC) Caltech is a refreshing change of pace compared to high school, and despite complaining, students still appreciate the value of the work required at Caltech. (BH) Even though Caltech is an improvement from the tedium of high school there are still instances in which Caltech work is tedious without improving learning. For instance, there are sets for 9-unit courses that take twenty hours. Such sets take away the students' time to go to class and the homework does not help in their understanding. It is helpful when professors have students write down how many hours they are spending on the sets and then use that information to recalibrate the number of problems. (SEC)

Sometimes it is just a matter of fixing the workload spread. In core, there is workload-spread oversight in which students have their problem sets spread out. It would be helpful to have something similar for upper division courses. Professors say that this should not be a problem if

students start their work early enough, but students have so many sets due they sometimes cannot even check sets with other people until the day/night before a set is due, especially if receiving the last lecture before the set due date is necessary to be able to complete the set. (DH)

Caltech As Manageable:

An opposing opinion is that Caltech is tough, but doable. (LH, OS, PH x3, RuH) Caltech is not unnecessarily harsh; it is as tough as students want it to be, and some students claim that giving the difficulty at Caltech a particular name (i.e. the "Caltech syndrome") makes it worse. (OS) Caltech's toughness prepares students for later difficult experiences. The stress builds character and encourages developing time management skills. The stress that students experience is more likely to be caused by becoming too involved in extracurriculars or addicted to drugs or video games. (PH x2) Another problem is that students come to Caltech with the expectation that it will be easy because everything else they had been told would be hard, like taking a lot of APs in high school, turned out to be easy for them. (LH, PH) Some assert that if Caltech students really loved math and science as much as they thought they did before coming to Caltech then the workload would not turn them away from the math and science. (RuH)

Sometimes managing workload is enough to make Caltech feel manageable. Freshmen need to be more aware that they will have free time senior year, so they will not be rushed to do something like taking Ch41 during their frosh year. By frontloading and thinking that they really need to take all these classes, they burn out too early. (OS) Students are happy and do not feel overworked in well-taught classes that assign challenging but reasonable homework. Thus, having better teaching could fix the Caltech Syndrome. (OS, SEC) For students who enjoy overloading, they will overload more if the amount of material in the courses is reduced. (OS)

Some students just need more help developing better study habits and to be encouraged to seek tutoring help. There should also be more support for students to take advantage of non-academic programs like mental health. (SEC)

How Caltech is to blame for the Caltech syndrome:

Some students are cynical and come to Caltech already predisposed to the Caltech syndrome such the students focus on the negative and then their complaining breeds more complaining. But, others do not seem predisposed to the syndrome and yet become bitter by the end of their time at Caltech. (DH) Students are concerned that the Caltech syndrome makes such a terrible impression on their peers that not only do people experience difficulty while they are at Caltech, the memory of the experience makes alumni refuse to donate money. (RuH)

The problem sets could be twice as difficult but half as much work. (RuH) Good difficulty challenges students intellectually, but bad difficulty is difficulty brought on by classes going too quickly, forcing students to triage the material that they actually try to learn. (BH, RuH) It seems as if professors have a theory that an easy class requires less time on work and that a harder class requires more time such that professors assign longer sets to compete for students' attention. Whereas, Denmark mandates that there be only 35 hours per week of homework. Students prefer rigor that makes them think deeply as opposed to work that is too dependent on books (with open book exams). The current system helps students get better at looking up materials online and in books, but students are not gaining a deeper understanding of the material. For example, Physics

majors may have looked up Maxwell's equations many times but cannot necessarily rederive them. (RuH, SEC) By time that students get to senior year, Caltech has so much taught them how to work through problems that they do not always know some of the foundational knowledge that they applied in solving those problems. (SEC) Caltech's mechanisms of teaching make it seem like there is more work: give students material they have never seen before and make them figure out answers for themselves. It is a beneficial teaching method, but very stressful since students have less guidance than they may have elsewhere. (LH)

Some students feel that there are easy majors and difficult majors at Caltech, where easy is defined as a major that lets students graduate with less work than that expected of most other Caltech graduates. This is an unhealthy perception, considering that a major may just seem easier for someone who has more background or some of the "harder" majors may just have more stringent requirements. There may be no difference in difficulty but just a misconception by the students, but it could take a significant period of time to change some of these perceptions within the housing system. (BH)

Examining Workload:

Caltech should look at the way that students manage workload, especially how many hours per week are really spent on school. It would be valuable to examine how other rigorous schools like MIT and Princeton manage to have happy students. (OS, SEC)

Core Curriculum:

Core is often used as a scapegoat for workload concerns and for the Caltech syndrome since students do not have time to pursue extracurricular interests. (BH, PH, RuH) It is especially clear that core is a culprit when students find that workload improves significantly after core. (BH) Core should be made more tolerable, as currently both professors and students look at core as problematic. (RuH) There are definitely aspects of core that are irrelevant to student interests (RiH), and that combined with the low faculty-to-student ratio in classes, can wear off students' enthusiasm (AH, SEC). At the same time, students recognize that core is necessary considering that a lot of basic, important skills are taught. It is especially important for people who do not have a good background in the material to learn core. (AH)

Without doubt, core is important, but many would agree that it has too many requirements. (BH, LH, PH, RuH) Freshman year requirements are particularly hefty, including a freshman lab course, Chem 3a, a menu course, and others. (LH, RuH) Students who take classes outside of core early on find that they have to double up on requirements later on to accommodate completing core. (AH) Yet, core is important in exposing freshmen who are undecided on an option to various fields. (AH, RuH) However, students would not want to spread those requirements out over more years since that would make it more difficult for students to change options and students would prefer to finish core as soon as possible. (RuH) Some suggestions that students have for making core more manageable for freshmen include: restricting freshmen to 42 units plus an "exploratory class" like Ph10, Ch10, Bi2, APh9a or some engineering course, except for when the student makes a particularly convincing argument for taking more units, and making drop day two weeks earlier for freshman so that the stress of a bad class selection does not last as long. (OS, SEC)

Specific courses that students would like the Core Reevaluation Committee to consider removing

from core are: some of the math, physics, humanities, and social sciences requirements and Bi 1. (AH, LH, OS)

- Students even suggest making Bi 1 a menu course and then requiring that students take two menu courses so that only students interested in biology will have to take Bi 1. (BH) Some students would prefer to take Bi 1 first term rather than Chem 1a. (OS)
- Students would like a choice of labs so that they can have the choice to do an advanced lab in their option in place of Ch 3a. (AH)
- The approach to math in Ma 1a, though well receive by some, is not useful for a lot of juniors and seniors who still cannot follow simple mathematical arguments because Ma 1a only taught two kinds of proofs. (AH) Some students would prefer that there be practical and analytical tracks for Ma 1a. (OS)
- The regulations forcing students to take particular kinds of humanities courses keep students from taking other classes they think are interesting. Even though students appreciate that some humanities courses help students learn to express themselves, the breadth requirements do not actually encourage breadth. (AH)
- Some students suggest added requirements: requiring that everyone take a practical physics lab course (RuH) and allocating space in core for research. (SEC)

Since individual students cannot usually agree on which specific classes should be removed from core, it may be more relevant for different majors to have different core requirements, in which case, quite a few options, such as computer science, would not need Phys 2. (BH, PH) If students took option-related core classes, they would at least be taking classes that interest them, such as chemistry people taking a chemistry version of Ph 2. (AH, BH)

Even if the classes themselves were not split by options, the math and physics sections could be split according to which options students are planning to take. This would be a way of introducing students to others in their option early on; however, it would then be more difficult to meet students outside of one's (prospective) option. Even so, students already meet others outside their options just by being in the house system. Furthermore, students would be able to start seeing material that is useful for their prospective options early on so they could determine whether that option is good for them (BH)

Practical track in math may benefit from introducing more theory so the students understand why the can do what they are doing. Analytical track could benefit from introducing students to more examples of the theory in action so they can have a deeper understanding of what they are proving. (RuH)

Students have mixed feelings about the difficulty of the exams for placing out of core. Some think that it should be more difficult since core is where a lot of students bond (DH), while others would argue that the current entrance exam procedure feels combative to some students who probably should have been able to pass out of certain classes. (AH) Students should be able to pass out of statistics separately from the exam to pass out of Ma 1 since the kind of math in each is different, and a more consistent setup for passing out of chemistry, biology, and math courses should be considered. (DH)

Another, albeit controversial, suggestion for managing core curriculum workload is that the core curriculum steering committee determines a time limit for problem sets. Problem sets that are too long take advantage of the honor code and the existing tradition of time-limited take-home exams.

For classes taken by freshmen in the first two quarters, a system like this would allow students to know that the pass threshold in their P/F classes exists at a reasonable workload. It would however move the emphasis from how long are you willing to work to how fast can you work that it may create a perverse incentive to "study for the problem set" outside the allowed hours. Also, this proposal represents a monumental change in the Caltech culture, but probably merits some more discussion. (OS, SEC)

A more specific core curriculum suggestion is that core math grading and grading of lab reports be standardized. (RuH)

Self-exploration and personal development:

Many students view that there is not enough time for self-exploration and personal development, unless students actively seek it. Even for some students who do seek personal development, it is hard to accomplish anything. (OS) Furthermore, students need help developing their confidence levels. (RuH)

Self-exploration and personal development is limited; students just do not have enough time to do all they want. (OS, PH) Admissions is misleading in letting students know they will have ample opportunity for self-exploration. (LH) Some of the major causes cited for this lack of self-exploration and personal development are:

- The house system, which is socially isolating and constraining. (OS) Even though the house system provides outlets, students would like to see more of other houses. Currently, students must be willing to forge those connections themselves in order for anything to come of it. (RuH) It is not that off-campus is much better since then students are cut off from all of campus. (OS)
- An awkward social structure. (OS) The ratio is also an easy target to blame when it comes to lack of social development. (OS, PH)
- The lack of humanities choices. Students would be happy to take classes they are interested in, but there are too few choices. (PH) If humanities and social science courses are supposed to help students become more well-rounded then allow performing/theatrical arts and cooking classes count for this breadth requirement, or at least let one fourth to one third of the humanities and social sciences requirements be reallocated to personal development. (FH) However, some students have too much tunnel vision to even realize what is missing. (PH)
- That there is definitely not enough time to do everything. (DH, PHx2) Students often have to take fewer academic classes if they want to explore other interests, which is difficult considering the graduation requirements. (DH, PH) Or, instead of budgeting time for outside interests, students do not take advantage of the resources that Caltech has to offer. (SEC) Students who do get too involved are more likely to be burned out by the end. (DH) Students pay a price for pursuing interests outside of academics (RuH, SEC), such as in a decreased GPA (LH), and in many cases students do not even have the time for mastering subject material and spending time in self-motivated, independent study. (RuH) It is demoralizing to spend 20 hours a week on work for a class and still get a bad grade. (LH)
- That students who want to take interesting classes outside of their options are forced to have a workload close to an overload. If options require ~42 units per term then to pursue some other interest, students have to take approximately 50 units. In biology, people who want to

take their menu course and a humanities course have to take at least 51 units. Even so, biology majors can take a humanities course at another time. If students such as biology majors receive the advice (maybe through BUSAC) that they do not have to frantically do a humanities class third term or that they can double up on humanities class in first or second term, then they will not feel they have to do 51 units in their first graded term. Freshmen in this, and other similar cases, need to receive continuous advice that they do not need to have so many units in order to graduate. (SEC)

- Many students did not come to Caltech to develop into adults (as college experience might typically indicate), but instead to learn lots of math and science. (OS) Not all students want Caltech to aspire to the well-roundedness of liberal arts schools that focus on self-exploration. (PH) Students should be learning that school is much more than academics, and it is sometimes tough to also develop as a person. (SEC)
- That students need more access to facilities and supplies, such as the student shop, which allows students to purchase chemicals with a valid reason so they can work on extracurricular projects. (LH)

A conflicting opinion is that there is definitely enough room for personal exploration because after going through Caltech, the students are much stronger academically. (OS) Admissions is not misleading; students know ahead of time that they are trying to learn science the best they can and just do not realize how difficult it is to get good grades. (LH x2) Reasons students cite that Caltech does not inhibit personal growth and self-development include:

- Though some students have a hard time maintaining all the interests they had before coming to Caltech, others maintain a double major and other activities. (LH)
- Some freshmen feel even after six months that they know a lot more about themselves than they ever did before. Many resources on campus, and in the House system in particular, encourage students to explore interests outside of classes. Although classes take up the larger part of a student's life, they do not do so to the exclusion of everything else. (OS)
- Pass-fail really helps students in the first terms, giving them hope for later terms and letting them gauge a sense of where they fit in academically. While on pass-fail, students also have more time for self-exploration. (LH)
- If nothing else, students have the summer for self-exploration. (PH)

A critical way to target the Caltech syndrome is to allow people the flexibility to pursue the things they find interesting, whether they find research, school, or arts / athletics interesting, they need time for those other activities. (OS) A lot of activities do not have critical mass, such that clubs continually die out and then require a significant effort to start up again. (DH) Having a non-academic activity serve as an outlet gives students some support in difficult times, helping them reestablish diminished self-esteem and pride. (RuH) Caltech could make an extracurricular activity mandatory to encourage students to practice some balance (PH), and even without such a mandate, students need to have initiative to do their work and extracurricular activities. Unfortunately, many students feel pressured against doing activities that take up time such as building for interhouse parties, reading books for fun, or even reading their textbooks for problem sets. (RuH)

Students could take seminars in work outside of their normal courses or options. It is important to get some of the enthusiasm faculty have for their work beyond just the technical details. There could be mini-seminar courses that span a couple weeks or just workshops that allow students and faculty more interaction while helping students gain interest in different topics. (AH)

How Caltech can improve the learning environment to reduce student stress:

Students seem physically and emotionally drained. (LH) The number of classes taken by an average Caltech student in any given term should be around 4 (or at least between 4 and 5), but is currently higher. Because of this, students spend less time focusing on specific interests and classes. The intensity of the class work at Caltech allows students a sense of pride about what they have been able to accomplish. Reduction in workload would not necessarily encourage students to form better relationships with faculty but may just encourage students to be lazier. Caltech would probably seem a lot nicer if the focus were taken off academics on a regular basis with fun events. Undergraduates are supposed to get to have fun as college students. One reason people get a bad impression of Caltech is because they all get have such a good time during prefrosh weekend (when there ARE a bunch of fun events), but once classes start, there are only a few nice things happening. (PH) By the end of their Caltech career, students are still not always sure that Caltech has prepared them for the real world. (LH)

The requirements could be reduced; core curriculum brings about a significant amount of unhappiness and stress. (OS) If there is only a 3 – 4 class difference in some options between an undergrad degree and masters degrees, maybe Caltech should give out masters degrees as well; students cannot apply for both programs at the same time currently. (RuH) Students can develop more through getting to choose their courses and doing more research. Caltech allows for a large degree of interdisciplinary work among faculty, but the undergraduates lose sight of this because there are too many requirements to be able to explore much outside of students' own fields. Obviously, core allows for work outside one's discipline, but people do not generally seem to enjoy it, at least not as much as they might if they were choosing the classes they take outside their option. (PH)

Time-consuming problem sets cause the classes assigning them to go way over their allotted units. Under-uniting is a major issue. (SEC) Classes that are rigorous are fine, but having every class rigorous at the same time beats people down. Classes with problem sets are fine, but it is not fine when those sets take in excess of 15 hours to complete, or if the problem sets have nothing to do with the lectures. (OS, SEC) Sometimes problem sets do not coincide with lectures just because of the timing of the work relative to the lectures, but other times TAs write the sets and the professors do not look over them to make sure the material coincides with what has already been discussed. (DH) Classes that have interesting problems are great, but when those problems are too complex or poorly defined, difficulties arise. (OS, SEC) It is depressing when the hard work that students put into coursework does not result in better outcomes, such as improved grades. (RuH)

Students find that if they take a day off, sometimes that puts them an entire week behind. (DH, SEC) If there were a week in the middle of term without problem sets, students could catch up on extensions and if they got ill in the middle of term. This could be during midterms week since many students fall behind during that week, and getting an extension rarely helps make workload better. (DH, RuH, SEC)

For classes that are fast-paced, which is nearly all of them (SEC), students who already have background in course material are at a significant advantage to those who do not. (RuH) A long time ago at Tech, professors used to ask what students want to learn about, allowing students to manage the speed and content of what was taught. (SEC)

At the SEC it was suggested that Caltech implement a semester system so that professors can have a longer period of time in which to introduce course materials and thus assign work at a more reasonable pace. Students would have fewer exams and less work to handle at a time and professors would no longer be trying to fit an entire semester's worth of work into one quarter. MIT has semesters and students also benefit from the break in between terms, which gives students more personal time off and flexibility in schedules. It is really important to try different solutions, even if it requires something as extreme as a semester system. A major benefit to the quarter system is that students can take more classes and if they find themselves in a class they cannot stand, chances are the class will be over soon anyway. However, maybe in a semester, students will feel they should speak up to have the course changed while the course is happening because otherwise they will be stuck in a bad course for a much longer period of time. (SEC) Students in house discussions argue that a semester system will not work so well at Caltech and that it would be difficult to make the transition anyway. The quarter system is good for morale as students realize they only have a couple more weeks left in term. An alternate solution to introducing semesters is teaching 10 week courses as 10 week courses rather than cramming a semester length courses into 10 weeks. (BH)

There should be a time limit for take home exams since exams that are too long do not seem to promote learning. At other universities, in class exams are not much longer than 2 – 3 hours. A maximum for take home exams should be closer to 3 hours then (FH, RuH), and if an exam is supposed to take longer than that there should be a mandatory break or two (FH). Also, infinite time exams should not be given in classes with graduate students and undergraduates since that gives an advantage to graduate students when they are graded on the same scale. (SEC, RuH) Not only are these long exams mentally taxing, students do not always have enough time in their schedules to fit in an exam that is six hours long or more. (SEC) Rather than giving unlimited time, or oppressively long, exams, faculty should be encouraged to weed out problems. (FH)

Professors should not assign homework to be due during midterms or finals week, if they are also giving out a midterm or final for that course during midterms or finals week. This has been reiterated at many conferences, yet is still an issue. Students need to take more responsibility for informing groups like the Academics and Research Committee when this happens. (BH, DH, RuH, SEC) Maybe midterm week needs to be better defined so that professors have a better idea of when exams and homework cannot be given out concurrently. (DH)

If most options require an average number of units each term of about 40 units, it does not make sense that there are 9 unit courses. If students take mostly 9 unit courses, they end up with 36/45/54 units. There is a significant amount of pressure to take 45 – 50 units because when students only take 36 units, they feel like they are not keeping up with other students or their graduation requirements. (RuH, SEC) Then, by senior year, most students are underloading. (RuH)

Part of the stress is that a lot of issues just build up over time for students, and lack of sleep that results from this accumulation of stressors is not healthy for students. (RuH) If students give faculty more input on classes, etc. then faculty can see what is taking so long and adjust courses to make them more reasonable. (SEC)

Caltech can be more stressful when students slack off. The collaboration policy on students allows students to abuse their peers, getting answers without going to class or trying to think through the work themselves such that students do not really end up learning the material. Take home exams

allow students to procrastinate on taking them until just a couple hours before an exam is due. It could make students more reliable to have regular final exams like at other universities. (PH)

Students could be encouraged to take more responsibility for their workloads and for being happy and healthy. Some students start too late on their sets, because other students do so as well, and they end up pulling all-nighters to finish on time. It would also help if students did not go to class when they are sick (the illness spreads!) or if they actually went to sleep when they are tired. If students take care of themselves, they will not need someone to direct them to the Health Center. (SEC) One way to handle workload is to take a term off to pursue their own interests for awhile. Students need support, such as from professors, to feel comfortable with taking that time off for themselves. If students could do coursework over summer then they could pace themselves better and those students who miss a class one year that is offered only every other year would not have to wait two or more years to take that course. However, students do not want sudden pressure to take summer classes. (DH)

If students could get credit for more courses from outside Caltech, they could take Caltech courses at a more reasonable pace. This would mostly apply to transfer students who should probably be allowed to get transfer credit for humanities courses. (DH) However, even for other students, there are additional fees and hassles acting as a barrier against taking courses at Pasadena Community College, Occidental College, and Art Center College of Design that inhibit them from taking advantage of classes offered at those schools in order to fulfill humanities and social science requirements. (FH) Social science requirements are constricted since there are very few choices and classes offered, and it is additionally constricted to require that students take two intro and advanced classes in the same topic. Students coming from other places may have had more options at their previous college/university. (DH) It seems the requirements are like those of a large university even though Caltech is small. (DH, LH) Sometimes the courses are so limited anyway they cannot fit into a person's schedule, or the courses are full. For instance, the T/Th 2:30 – 4 pm time period is popular for humanities classes but conflicts with quite a few computer science classes. (DH)

Scheduling of courses is a problem in some options. When classes overlap, students take classes at the same time as others and then always have to miss lecture. Students take classes at the same time as others and then always have to miss lecture, which makes one of the classes pointless. This is both a scheduling issue (administrative) and student issue. If both of the classes are required for that student at the time the student is trying to take them, then this is an institutional problem. There are other kinds of scheduling issues. Many upper division courses in several options (SEC), are offered every other year, making it difficult for students to schedule their classes. (RuH) Students overload sometimes just to make sure they can take a desirable or required class when it is offered. (SEC)

If classes are going to maintain status quo workloads, then CS11 and Ch3B need to have their uniting increased to make them more on par with other classes. (PH) Freshmen need to be informed that uniting is an unreliable measure of how much time courses can take or how much work it is. While core courses, such as Ph 1 practical track can seem like they have not been united appropriately, upper division classes actually can be much worse. Many of the 30-hour classes are classes that have graduate students in them, such as CS136 and APh183, which puts the graduate students at an unfair advantage since they can devote more time to the coursework. (DH)

There should be a separate curve for graduate and undergraduate students, since sometimes graduate students significantly alter it. (DH, RuH) This could be a problem because sometimes the classes are

too small. Faculty should at least have guidelines for when they have a mix of graduate and undergraduate students. (DH)

Unfair curving is a problem between majors. (DH) Some majors, such as math, are curved around A's while there are other majors curved around B-'s. (DH, LH) There are a couple classes in which the curve works against students, such that an 86% is turned into a C, an example of which was Ch4. (DH)

Some students would like the caps for P/F'ing classes removed. (OS, PH x2)

The academic environment can be improved by taking a more innovative approach to teaching. (OS, SEC) The monotony of the lecture and problem-set approach that is characteristic of the Caltech education is one of the prime causes of the "Caltech Syndrome", and is something that can be fixed without making Caltech a less demanding place. In general, students do not mind working hard on classes as long as the classes are interesting. (OS, SEC)

There should be more research opportunities or encouragement for independent study. Without officially-sanctioned academic but extracurricular development, students often just load up on interesting classes, which can be suboptimal given how valuable research experiences can be relative to class work. (OS) Caltech needs to continue to capitalize on the advantages of the research experiences. (RuH) Many students go to Caltech for the research environment, and really do want to be on the cutting edge of research. (SEC) However, some students are concerned that the SURF program has become too cookie cutter and is less like real research. (RuH)

There should be more BBQs and outdoor events to reduce stress and let students interact with other houses and have a good time. Food is good bribery material (PH x2) The Student Life Office has been doing an excellent job of putting the spark of fun into student life every now and then, but more is better since they help students take a mental break from work. However, Caltech should also focus more on helping students deal and cope with stress than on reducing stress. (PH) Students need to learn how to cope with their own stress since free social events and decreased workloads will not improve their long-term ability to handle hefty workloads. (OS)

Even though it is nice that Caltech does not teach to the GREs in terms of making sure that the material is more interesting than GRE-level material, this format of teaching makes applying to graduate schools more difficult. (RuH)

Caltech needs a better safety net for minorities. MIT actually has an international dorm and an all African-American dorm. (RuH)

In addition to exploring how Caltech can improve the student experience, Caltech should explore how to better prepare students to be leaders in their field. Caltech should be extremely cautious about trying to take measures that have the potential of weakening the quality of education. For instance, while reducing students' workloads may improve the student experience, it may not actually be better for the students in the long run. (SEC)

There additional miscellaneous items that students feel would improve the academic culture at Caltech such as:

- Advertising pizza classes more. (RuH)

- Make sure that problem sets come out on time. (RuH)
- Improve Caltech dining. (BH) One of the biggest problems with student life, though non-academic, is the food on campus. There should be at least one other option for food besides the C-store on weekends. Also, house dinners in the north and south houses are fairly bad and the prices in the C-store are completely unreasonable. (AH, PH)
- Listen to complaints and do something about them; there are many repeated complaints in Student-Faculty Conference reports over the years. (BH)
- Bring back student designed fitness. Student designed fitness used to actually allow students to design their own fitness regiment, but unfortunately, student designed fitness no longer has the student design aspect. Students are only allowed to do running, biking, and swimming, but other activities should definitely count. (DH)

Suggestions for future surveys:

ARC should conduct a campus-wide survey asking people how much they have been affected by the "Caltech Syndrome" and why. This would give us a better picture of how big a problem it is and where its roots lie. (SEC) Proposed questions are: To what extent have you been affected by the Caltech syndrome? Do you find Caltech an overly demanding place and why? How much time do you give to extracurricular activities and self-enrichment? What do you think causes the Caltech syndrome? How would you recommend fixing this problem? (SEC)

There could be a short survey every term asking students about their general level of happiness, which could then be tracked to see when happiness starts to drop. There could be background questions on students' majors, course loads, and extracurricular activities to see what variables have the greatest impact on a student's level of happiness. (OS, SEC) Biology has found fairly interesting patterns by surveying students about their happiness levels at the end of the year and tracking levels across years. (SEC)

5 - Student-Faculty Interactions

Throughout Caltech, there are great examples of student-faculty (SF) interactions, enough that some students claim SF interactions are fine (PH x5), but that is not the norm. It is critical that Caltech lower activation energy for SF interactions, helping students and faculty become less intimidated of each other since there are significant benefits to be gained from improved SF interactions. SF interactions have a significantly stronger impact on the undergraduate experience than they receive credit for, and we should take advantage of the community together rather than having the separate groups act like we are in parallel universes. (SEC) One of the most oft-cited ways to bring students and faculty together is through offering more free food events, both general and option-specific. (OS, PH) Sometimes students are shy and reluctant to talk to professors but if they realize through attending some informal free food events that talking to faculty is helpful, they will learn to seek out those interactions themselves. (SEC)

Benefits of SF Interactions: Students can help improve teaching and shape courses if they interact more with faculty. Science is best taught in a framework involving a faculty mentor, as demonstrated in the strength of the current research mentorship; however, mentoring should extend into academics as well. Faculty alumni who stay involved and empathize with current students are a great asset. Helpful SF interactions are currently facilitated through MOSH option teas and SF lunches, hosted by the MOSH and ARC, but there should be more ways to encourage SF interactions. Interacting with a faculty member can be so refreshing for students that they remember again why they chose to be at a place like Caltech. (SEC)

Problems with SF Interactions: Quantity and quality of the SF interactions varies a lot. Even people committed to improving these interactions are unsure how to do so. Faculty alumni are difficult to convince that Caltech still needs to be changed and improved. (SEC)

Academic Solutions for Improved SF Interactions:

Approachability of professors depends on the class size; in divisions like geology that have small class sizes, not often greater than ten people, professor approachability is much higher. (BH) There should be more non-humanities classes with enrollment lower than fifty students (RuH); core courses are too large for great student-faculty interactions. (LH) Ph 11 has been very valuable, but Ph 11 has limited admission, and lots of people want to be in the class but do not get in. There should be several instances of small, interactive classes like this. (OS, PH x2, SEC) For instance, there could be small discussion groups in topics that are interesting to both students and faculty so they can be engaged in fun dialogues. (LH) Or, offer more seminar classes that are at convenient times so that students in freshmen and sophomore years can get to know professors (LH, PH). Currently students cannot always attend the seminars since they conflict with regularly scheduled classes. (PH)

It is especially nice if classes are small enough that the professors can learn students' names. (OS, SEC) By calling on students' names, faculty are much more likely to get responses from the students since the students will feel like they need to pay better attention to the class material. While some students find it creepy for professors to know their names, some students really appreciate this break in anonymity. Furthermore, in small classes, professors can help students integrate what they are learning and maybe even incorporate the ideas into projects, and students feel more comfortable

asking questions of professors in small class environments such as physics recitation sections. (SEC)

To make a bigger class feel like a smaller class environment, professors can break students up into groups and ask them questions, going down the line from back to front, interspersing the questions. While some students dread that kind of learning environment, if forces them to be more engaged in the learning experience. If professors randomly call on students, students are more alert in case they are next. (SEC)

If students are afraid to talk in bigger classes, they need to get over it and be selfish and take responsibility for making sure they learn what they need to be learning. Faculty encourage students to be the first ones to ask questions or talk in class since often if no one asks a question in the first or second day of lecture then students are much less likely to ask one in later lectures. Students say that even when professors pose questions for them to answer, students can be too shy to answer questions very quickly because they seem too difficult or easy and they are intimidated by their peers. Establishing a friendly class environment really encourages questions; one class went to tea together, after which they could interact with each other better. Some suggested bribing students with candy to get them to ask and answer questions, but this is not always effective. (SEC)

Even though oral examinations, like in EE20, are intimidating, they give another chance for students to interact with faculty. Students also learn from these, as they have to actually explain the material. It really enhances understanding of material when the students have to be knowledgeable enough about it that they can explain it to someone else. (SEC)

Faculty should give undergraduate-oriented presentations on their research. It would have to be undergraduate-oriented, so basic requirements to understanding should be reasonable and should listed, maybe in terms of course number “prerequisites”, ahead of time. Attending the already-existing seminars, the ones that are aimed primarily at graduate students and faculty and which usually feature speakers from outside Caltech, is fun, but they are always a hit-or-miss in terms of understandability. It would be even better if there were some kind of free-food event afterward, such as a real meal with a big table around which students who want to follow-up with questions could sit and talk to the professor. Students can improve student-faculty relations by taking interest in things that interest the faculty. (OS, SEC) As a result of the discussions in Avery, an Avery Lecture Series has begun in which students can go to a reception with a faculty member who will then give a one-hour talk and finally join students for dinner to continue answering questions from the talk. The first two happened in Spring 2008, given by Professors Alan Weinstein and Kristof Koch. (AH)

Bringing Faculty Into the Student Sphere:

It would make faculty seem less intimidating if faculty attended more student dinners in the houses. The MOSH contacted the social chair and IHC to see how much of the $300/term each house is using, and some use very little of that budget. Part of the reason students do not bring faculty to dinner is out of concern for the faculty. (SEC, RiH) Faculty should still be invited to dinner, and show up, even if it is a culture shock for them. (OS) It would be valuable to bring faculty into the student houses more often. (LH)

Faculty who make themselves more accessible at times that are convenient for students, such as Professor Politzer holding help lab in the evening, really help facilitate student-faculty interactions. (OS, SEC) Faculty should make themselves sincerely available, or at least act like they really want

to interact with the students. (PH) One way that professors seem less approachable is by hinting that they are upset they have to teach undergraduates rather than just graduate students or by teaching a at a level that is more appropriate for graduate students than undergraduates. (RuH)

Faculty in computer science wonder if SF interactions are great because it is a younger field, making students feel like it is easier to interact with faculty. (SEC)

Caltech could have "option teas", like the MOSH does, held more often and on-campus. (OS, PH) It would encourage students to attend if these did not even require an RSVP. (PH x2) At such informal events, faculty could invite students to dine in the Athenaeum more often, to come to seminars, and to do research during the academic year. (OS) Professors would definitely be more active in talking to students if they invite them to lunch to get to know the students better, and that is a way to take better advantage of our low student-faculty ratio. (PH x4) It helps when faculty take interest in topics that interest students, and in turn, students can give feedback about classes, etc. (OS)

The professors who came to the SEC were obviously interested in improving SF interactions, but there needs to be a way to also target professors who do not normally seek out SF interactions. (OS) It may be helpful to ask the active faculty how their less active peer faculty could be encouraged to become more active. (LH)

Some students feel faculty will be too busy to talk, and are very intimidated by them. Perhaps if faculty made it clear when they are free, besides 'by appointment' talks, more students would talk to them. (PH)

How Students Can Improve SF Interactions:

Students should organize efforts to get fellow students to come to talks and seminars more often and to try to do research during the academic year. (SEC) Research is one of the best ways to use the low SF ratio, and there should be a push to bring more students into the lab. (LH, PH x2) By mingling with faculty in the lab, etc., students would improve student-faculty relations. (OS, SEC) However, having too many lab courses in some options discourages students from participating in original research. Maybe there is a way to require that one term each year have fewer classes so that students could pursue research during the year. (PH) It will help that there are going to be possible research projects that students can work on with faculty published in the Undergraduate Research Opportunities Handbook (UROH), which will be hosted by the Student-Faculty Programs Office. (PH)

Students should realize that there are a lot of professors that want to see them succeed and also want to be involved and take advantage of that. (PH) Students should utilize the Take-a-Prof-to-Lunch Program more regularly. (PH) They should also ask faculty to dinner, to participate in other house activities, and watch sports games. (PH x2, SEC) Maybe professors can let students at the start of a course whether they would like to go to student dinners or sports matches so that students at least know in advance that it is a good idea to invite those particular professors. (SEC)

Students should take advantage of already available opportunities for interacting with faculty, such as office hours. Students could even try talking to professors, instead of TAs, when they have questions. (PH x2) Students should go to class (PH) and be more engaged in lecture. (LH) Student organizations could continue reminding students about the money that is available for student-

faculty interaction, as well as the help from the Dean's Office and MOSH. (SEC)

However, some students do not want to interact with faculty that much, or are not research oriented. (PH) Or, students do not have the courage to approach faculty. (DH)

Frosh-faculty Interactions:

SF interactions must begin at the freshman level since once students are juniors or seniors they either numb to any faculty taking an interest or already have very meaningful interactions in place from taking small classes, researching with multiple professors, or needing to gather scholarship or graduate school recommendations. (OS, SEC)

In ChE / Ch at least, many of students conduct research and develop meaningful relationships with their mentors. In addition, the executive officer of ChE takes time to get to know every single student in ChE starting at the sophomore level, even as student numbers increase substantially. (OS)

Students who want to develop relationships with faculty outside their area of expertise find it nearly impossible to do so. Freshman year means huge classes with no faculty interaction unless students are looking for a SURF, taking freshman humanities courses, or interacting with a Ph1abc professor/TA who takes an interest in them. (OS)

Talking to faculty early on makes it easier for students to find research opportunities. (PH x2)

Researching SF Interactions:

Caltech should look at how the larger schools with 10:1 ratios promote student-faculty interactions. (OS, SEC)

SF interactions, at least in some options, appear to improve as students get more involved in their options. (PH)

Some options have excellent SF interactions and those should be a model for other options. For instance, the ChE department already reaches out to its students by having the executive officer meet with sophomores, juniors, and seniors every term to get feedback from the students. The chemistry faculty have also done a great job reaching out to students, but other departments are not as accessible. The departments in which SF interactions are not as well founded should be identified and their SF interactions improved. (PH x2)

6 – Closing

Some Broad Take-Home Points

There are some very difficult cultural problems to solve, especially when the culture is a mix of good and bad, such as the extreme rigor helping intelligent students become more proficient in their chosen fields that at the same time can lead to burn out. Students doing 36 units can feel insecure compared to a ChE who has to take terms of 60 units just to graduate. Inherent in this cultural problem is that some students do not feel any pressure to take more units. Or, they at least feel like it is not just peer pressure, but internal pressure driving them to try and take more units. This kind of issue is an example of something that should be surveyed. Opinions are already split between the houses. Moreover, if this is not a widespread problem, the individuals who are affected by it should still be helped through a support network. Furthermore, it should be addressed with incoming frosh. (SEC)

Many topics raised in the conference merit yet further discussion. There should be more focused discussions, within smaller groups (maybe within houses or within divisions) to find solutions to the issues raised in the report and the conference. It is really important that the issues raised in the conference are actually used to direct changes at Caltech. A large population is concerned about the direction that Caltech is taking and would like to see positive improvement. A lot of the changes that people want to happen depend on the student body being proactive, e.g. talking to professors when needed, etc. It would be helpful to create departmental BUSAC-like bodies that would discuss issues specific to courses in the department. This could increase flexibility from the current system, since these bodies would deal with more homogeneous and smaller constituencies, so implementation of changes would be easier. Another example of the necessity to be proactive is that students need to be more aware of the specific funds for student-faculty and house-faculty interactions so they can take advantage of the funding. (SEC)

Other Comments

There should be more conferences like the SEC. If a conference is going to have a time limit restricting discussion, there should be a notes or comments page on the handouts so that people do not forget their comments. (OS) It is nice that overall ARC and ASCIT are more active and they should continue being more active. (RiH)

Acknowledgements:

People who presented in sessions at the Student Experience Conference:

- Residence Life: Prof. Gary Lorden and Adrianne Stroup
- Teaching and Advising: Prof. Douglas C. Rees and Prof. Cindy Weinstein
- Caltech Syndrome: Andrea Dubin and Caleb E. Ng
- Student-Faculty Interactions: Prof. Scott Fraser and Fedor Manin

People who moderated sessions at the Student Experience Conference:

- Residence Life: Tzong-Lian Tsay
- Teaching and Advising: Vibha Laljani

- Caltech Syndrome: Parvathy Menon
- Student-Faculty Interactions: Michael Woods
-

Other students involved in conference planning and logistics:

- Csilla Felsen
- Brant Belson
- Ryan Hamerly
- Noah Rahman
- Kevin Tjho

House discussions and surveys were conducted on the following dates by:

- ***Avery*** **(AH) –** Student-faculty house discussion held by Wesley Yu, Avery ARC representative.
- ***Blacker*** **(BH) –** Student house discussion held on April 14, 2008 by Daniel Lo, ARC secretary.
- ***Dabney*** **(DH) –** Student house discussion held on April 18, 2008 by Michelle Filiba, Dabney ARC representative, with notes taken by Tzong-Lian "will" Tsay, ARC Chair.
- ***Fleming*** **(FH) –** Student house discussion held on June 1, 2008 by Fei Yang and Pradeep Ramesh. A survey was also conducted.
- ***Lloyd*** **(LH) –** Survey conducted by John Leichty, Lloyd ARC representative, with 6 anonymous respondents.
- ***Page*** **(PH) –** Survey conducted by Mason Smith, Page House president, with 24 anonymous respondents.
- ***Ricketts*** **(RiH) –** Student house discussions held by Andrey Poletayev, Rickets ARC representative.
- ***Ruddock*** **(RuH) –** Student house discussions held on March 16 and April 19, 2008 with notes taken by Tzong-Lian "will" Tsay, ARC Chair.
- ***Online Survey*** **(OS) –** Anonymous comments on the online ASCIT Donut Survey on the Student Experience, with 17 respondents.