

Yale 2-4 Report
Department of Chemistry
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Chemistry's 2-4 committee notified all of the chemistry graduate students that we would convene a meeting with them to discuss the topics suggested by Dean Jon Butler in his request for input for the 2-4 report. We held it at a time that did not conflict with courses or seminars. We provided light refreshments. Eleven students attended. The committee was also provided with anonymous student responses to the online questionnaire regarding the 2-4 project. There were about 15 of those. The results of our meeting with the students, and the responses to the online questionnaire were presented to the faculty at a faculty meeting, and their input was obtained.

This report is broken down into four sections: 1. A synopsis of the input we received from our graduate students, 2. Input from the faculty, 3. Our recommendations for the Curriculum Committee, and 4. Other recommended actions.

1. Findings from our meeting with the students, and the results of the online survey.

It is always difficult to summarize the thoughts and feelings of many different people. While a general consensus was usually attained in the face-to-face meeting with the students, the results of the online survey had significant variability. That is, for any particular question, the responses might range from "Everything is just fine," to "Everything is in disarray," along with everything in between. However, this committee has done its best to present the consensus view as accurately as possible.

The entire student body was sent the following agenda in advance, along with a statement that we were interested in receiving input on any topic at all, not only those on the agenda.

- Choosing a group (although this is in year 1, not 2 – 4).
- Mentoring practices: Meetings with students and feedback on written work.
- Evaluation of research experiences: In writing?
- Type and amount of coursework required.
- Dissertation prospectus, oral exam(s), advancing to candidacy.
- Opportunities to present work to peers and faculty.
- Written evaluation (progress report) in years 1 and 2?
- Clear expectations? (advancement to candidacy, and cumulative exams)

Our findings are summarized below.

Choosing a group:

Most students felt that choosing a research group was reasonably straightforward. They felt that the laboratory rotations were very helpful. However, several students in preparative chemistry (synthetic organic and inorganic) felt that they did not have enough time to make an informed choice. They carry out three 3 week rotations, and choose a research group in November. The physical/theoretical students do four 3 week rotations, and choose a group at the end of January,

and that seems to be fine. The biophysical and chemical biology students perform three 8 week rotations, and choose a group at the end of April, and everyone seems to be happy with that. One suggestion was that all students carry out long rotations.

Mentoring practices: Meetings with students and feedback on written work.

The students at the face-to-face meeting felt that the mentoring system and feedback on written work were A-OK. However, the picture presented in the responses to the online survey was less rosy. Actually, no concerns were voiced over feedback on written work. On the other hand, there were some students who felt they are not receiving enough mentoring. They acknowledged that it is highly dependent on who one's research advisor is.

Evaluation of research experiences: In writing?

This topic was not included in the online survey. In the face-to-face meeting, the students felt that evaluation of research experiences is highly dependent on a particular faculty member. While they would welcome written feedback (actually, students who have advanced to candidacy already receive that), they also realized that if it were an additional burden to an already busy professor, it would not be very useful.

Type and amount of coursework required

Our students felt that the amount of coursework is appropriate. One concern is that we often must "bracket" graduate courses because we are taking care of our undergraduate teaching responsibilities. Therefore, our graduate students cannot always take the appropriate courses at the point in time when it makes the most sense. A few students suggested that more flexibility in the particular courses taken would be useful – especially for students who do not fit neatly into a particular division in the chemistry department.

Dissertation prospectus, oral exam(s), advancing to candidacy.

Students felt comfortable with expectations for the dissertation prospectus and its associated oral exam. They felt less so with regard to the other oral exam: Referred to as outside topic, progress report, or "anti-thesis" depending on the type of research they are doing. The preparative students felt a meeting during their second year explaining the "anti-thesis" would be helpful. The biophysical and physical students at the face-to-face meeting felt the changing status of the second oral requirements were confusing. Some students in preparative chemistry felt the cumulative exams could be more beneficial if more feedback were provided.

Opportunities to present work to peers and faculty.

The students felt that there were ample opportunities to present their work.

Written evaluation (progress report) in years 1 and 2?

Currently, we have annual written evaluations only for students who have advanced to candidacy, or for students in years 1 and 2 who are not performing well. The students felt that some feedback in years 1 and 2 would be helpful.

Clear expectations? (advancement to candidacy, and cumulative exams)

One area of concern that came through in the face-to-face meeting and the online survey is that students are often unsure of expectations. Part of this is due to requirements that change; the Curriculum Committee reviews the curriculum each year. There was also uncertainty with

regard to thesis committees: choosing one, and meeting with the members. A final area of concern was that even when deadlines are stipulated in the handbook, they are often not enforced.

2. Input from the faculty.

Our findings were presented to the faculty at a faculty meeting. Our subsequent discussion focused primarily on feedback. It was noted that since dissertation progress reports are now available online, students can review their advisor's comments. In the past, when paper forms were used, the students never received a copy of the comments. Everyone agreed that written evaluations at the end of years 1 and 2 would be helpful for the students.

3. Recommendations to the Curriculum Committee.

Choosing a group:

We recommend that all students performing 3 week rotations carry out four of them, and therefore choose a research group at the end of January. We also ask that the Curriculum Committee debate the pros and cons of having all students carry out three 8 week rotations before choosing a group.

Mentoring practices: Meetings with students and feedback on written work.

This is not under the purview of the Curriculum Committee. We recommend that the DGS send a reminder to the faculty every year at the time dissertation project reports are due, and ask for substantial comments, not just a single word or one sentence.

Evaluation of research experiences: In writing?

See preceding statement. It applies to this topic as well.

Type and amount of coursework required

The Curriculum Committee will be asked to consider more flexibility in courses chosen. The issue of bracketed courses is related to the size of the faculty and the amount of undergraduate teaching we do. As we continue hiring additional faculty, courses will be bracketed less often.

Dissertation prospectus, oral exam(s), advancing to candidacy.

We recommend that the graduate student handbook be revised to more explicitly describe the expectations for these activities.

Opportunities to present work to peers and faculty.

No action required.

Written evaluation (progress report) in years 1 and 2?

We recommend that the DGS provide a written progress report for the students finishing year 1, and that the research advisors do so after year 2. In each case, the student will be asked to first provide a self-assessment. This will ensure that both parties have the same view of the situation.

Clear expectations? (advancement to candidacy, and cumulative exams)

We recommend that the graduate student handbook be revised to more explicitly describe the expectations for these activities. We have already regularized the formation of thesis committees for all students, and the handbook now reflects that. We also recommend that deadlines in the handbook be adhered to, with extensions granted under only truly exceptional circumstances. Finally, in addition to posting the handbook on the Chemistry Department's website, we recommend that the registrar email the handbook to all the students every year. With regard to cumulative exams: We recommend that in addition to posting the topic on the bulletin board, it be emailed to the students directly. Several other, more detailed aspects of the administration of cumulative exams will be discussed by the Curriculum Committee.

4. Other actions and observations.

There is a general tendency for people that are basically happy with the way things are going to not respond to online surveys or attend meetings with the DGS. It is an "If it's not broken, don't fix it" viewpoint. Therefore, the fact that only 15 – 20 students out of 130 provided feedback is an encouraging sign.

There were a few general inconsistencies. For example, some students want more flexibility, but others desire more rigidity. This falls into the "You can't please all the people all the time" category.

The lack of awareness of the Chemistry Graduate Student Handbook must be addressed. It appears that many students do not know it exists, and that it is available on the Chemistry website.

As a faculty, we need to instill in our students a sense of independence. Some seem to want to be told what to do every step of the way. We need to explicitly and continuously remind them that graduate school is fundamentally different than undergraduate studies. Our goal is to transform them into independent scientists.