2012 Graduate Student Survey Summary

This survey was completed by 70 students. There was a very even distribution of responses from students in each year of the program. 83% of the students that completed the survey were pursuing a Ph.D. degree while 17% were pursuing their Masters degree. 91.8% rated the overall quality of the graduate program as either Exceptional or Better than Most.

Overall Quality of Graduate Program

<table>
<thead>
<tr>
<th>Rating</th>
<th>Percent</th>
<th>#</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exceptional</td>
<td>39%</td>
<td>24</td>
</tr>
<tr>
<td>Better than Most</td>
<td>53%</td>
<td>32</td>
</tr>
<tr>
<td>Standard Quality</td>
<td>7%</td>
<td>4</td>
</tr>
<tr>
<td>Could be Better</td>
<td>2%</td>
<td>1</td>
</tr>
<tr>
<td>Very Poor</td>
<td>0%</td>
<td>0</td>
</tr>
</tbody>
</table>

Curriculum & Resources:

More than 60% of students responded that they felt there was sufficient breadth in the graduate course offerings and depth of specialization in our curriculum, while one in four felt that courses could be less broad and contain more depth. More than 60% of students felt like they have enough resources to carry out their coursework and research, while nearly 30% felt there could be more resources made available.

Recruitment & Admissions: Students felt the overall admission process is relatively straightforward and easy to navigate. 60% of students feel the admission process is just selective enough, while 40% felt it could be more selective. A plurality of students felt that the recruitment offer received from our college upon admission was on par with other colleges, while a nearly equal number felt that OSC provided the best offer. “Reputation” was the deciding factor in a majority of students’ decision to come to OSC for graduate school.

Funding: 64% of graduate students claim they found their current research group by approaching a professor directly, and 70% of those in a research group state that they have adequate or fully sustained funding while 30% have limited funding, intermittent funding or no funding. 80% of students feel that OSC graduate student funding is equivalent or more than comparable departments at the University of Arizona. 67% of students agree with the current system for funding first year graduate students.

Comprehensive Exam: 50% of responders have taken and passed the comprehensive exam, and 40% agree that they wouldn’t change it. Suggestions included making the oral exam more research based.

Academic Programs Office: 80% of graduate students rated the quality of advising and clarity of information from the academic office as either Exceptional or Better than Most. They felt that providing scholarship information, planning social and academic events, graduate student orientation, and coordinating job and interview opportunities were all equally valuable services provided by the academic programs office.

Industrial Affiliates: 70% of graduate students felt that the student participation in Industrial Affiliates was useful, and 90% felt they were adequately informed about the avenues of involvement in the program.

Department Questions: Nearly 3 in 4 graduate students rated the quality of advising provided by their advisor as good or exceptional. 60% of students felt that communication within the department is either good or exceptional. Graduate students responded that the top strength of the graduate program is the variety of research programs and courses, while the top weakness of the program is the number of required courses.
Curriculum

Is there sufficient breadth of graduate course offerings?

- Far too Many: 3.1%
- Could be More: 6.3%
- Right Amount: 29.7%
- Could be Less: 29.7%
- Far too Few: 0.0%

Is there sufficient depth for specialization in our curriculum?

- Far too Much: 1.6%
- Could be Less: 1.6%
- Right Amount: 68.8%
- Could be More: 23.4%
- Not Enough: 4.7%

Resources

Do you have enough resources to carry out your coursework?

- Too Many: 3.2%
- All Provided: 65.1%
- Some Missing: 30.2%
- Too Few: 1.6%

Do you have enough resources to carry out your research?

- Too Many: 3.3%
- All Provided: 67.2%
- Some Missing: 27.9%
- Too Few: 1.6%

What additional courses could be offered? (# Resp)

- 7: More Photonics and Solid State courses
- 4: More Laser-Focused Nonlinear Optics courses
- 3: More Advanced Non-Imaging Optics courses
- 3: More Advanced Image Processing courses
- 2: More Advanced Statistics courses
- 2: Class on Optics Industrial/Consulting Practices

What subject areas could be improved?

- 6: Photonics
- 5: Nonlinear Optics
- 3: Quantum Mechanics
- 3: Image Processing

Recruitment and Admissions

What is your opinion of the overall admission process?

- Very Straightforward: 52.5%
- Adequate: 47.5%
- Too Convoluted: 0.0%

Any part you would improve?

More explanation that RA offer is only for 1 year
Should the admission process be more or less selective?

- Could be Less Selective: 0.0%
- Just Selective Enough: 42.6%
- Could be More Selective: 57.4%

Should admission be to the college as a whole or to a specific research area?

- College as a Whole: 75.4%
- Specific to a Research Area: 24.6%

How did the College of Optical Sciences recruitment offer compare to that from other institutions?

- Similar Offers to other Colleges: 40%
- OSC had the best Offer: 37%
- Other Colleges had better Offers: 23%

What was the deciding factor in your decision to come to OSC for graduate school?

- Reputation: 49%
- Breadth of Courses/Research: 35%
- Financial Reasons: 22%
- Location: 20%
- Depth of Specific Research Area: 18%

**Funding**

How did you find your current research group?

- By asking a professor directly: 64%
- By a professor asking me: 12%
- Combination of both above: 12%
- I don't have a research group: 7%
- Asking other graduate students: 5%

If you are in a research group, how has the funding situation been for you so far?

- Fully sustained funding: 47.4%
- Adequate funding: 22.8%
- Limited or intermittent funding: 8.8%
- No funding: 21.1%
What has been your primary funding source?

![Funding Sources](chart1.png)

How do you feel that graduate student funding in Optical Sciences compares to other departments at the University of Arizona and Physics or EE departments at other schools?

![Funding Comparison](chart2.png)

In general (not referring to your personal experience), what is your opinion of the current system for funding first year graduate students?

![Funding Opinions](chart3.png)

If you could modify it, how would you change the current first year funding system?

- Perhaps an alternative would be to guarantee one year of funding for all incoming students with the expectation that they will TA (without pay) later on in the program (maybe after they pass comps). I would also advocate accepting fewer students if there is not enough funding / research groups to go around.

- System is good. However, I think it would be nice to give out a few outreach fellowships. We tend not to have enough participants in outreach/volunteer events and paying someone in their first year to do so would help alleviate this problem.

- Before accepting students see what are the possible vacant positions for the student in advance. It appears there are more students than funded-positions. Also, most departments make first year students TA, why don’t we?

- Do not accept people unless they can be fully funded. I have only been fully funded a few times and it it was with a mixture of RA and TA positions. It is just too stressful to have to worry about whether you can afford to live while working on your PhD.

- I begin speaking with my research group before I arrived on campus and had worked out funding immediately. I think the college should push students to really take this more seriously. I think it is important for us as graduate students to pursue funding sources ourselves. Too many of my colleagues wait until the last minute to seek out such sources.

**Comprehensive Exam**

Where are you in the comprehensive exam process?

![Exam Status](chart4.png)
What is your opinion of the comprehensive exam process and what, if any, changes would you suggest?

- My only suggested improvement would be to split up the pass line by specialty. In some tests, a particular question in, say, quantum optics would be extremely difficult and cause low scores for quantum track students but not for other tracks. So, to minimize the score effect, look at each track separately to compare apples to apples.

- The suggestion that a student should take the OPTI 505/511 pair or the OPTI 544/546 pair should be scrapped. If OPTI 546 and OPTI 511 are more relevant to your research, then you should be able to take both questions on the prelims.

- Passing score minimum should be determined before knowing the names of the students (and not changed afterwards). Total number of retakes allowed should be set before taking exams. If max number of possible taking exams is set and exceptions are made then it should be for everyone and not for selected few.

- I am a proponent for keeping both the written and oral comprehensive exam. However, I have never understood the reason for limiting mathematical assessment on the written exam. If I were a faculty member on the prelim board, I would be pushing to allow instructors to write questions that involve more rigorous mathematical analysis within problems.

- Regarding the oral exam, there needs to be more standardization between the committees that are assigned to students. The fairest way to assign a committee is to simply draw from a hat. No blackballs, no first choices.

Academic Programs Office

How would you rate the quality of the academic advising provided by the academic programs office?

Average: 4.13/5.00

- Exceptional: 44%
- Better than Most: 36%
- Standard Quality: 18%
- Could be Better: 3%
- Very Poor: 2%

How would you rate the accessibility and clarity of information relating to your degree requirements?

Average: 4.16/5.00

- Exceptional: 36%
- Better than Most: 16%
- Standard Quality: 16%
- Could be Better: 9%
- Very Poor: 2%
- Average: 4.16/5.00

What do you feel are the most valuable services provided by OSC’s Academic Programs Office?

- Scholarship/Fellowship Information
- Job and Interview Coordination
- Graduate Student Orientation
- Social/Academic Events
- Other (please specify)

- Exceptional: 62%
- Better than Most: 58%
- Standard Quality: 58%
- Could be Better: 18%
- Very Poor: 10%

Other Valuable Services?

- Helping with registering for classes, finding equipment, and figuring out degree requirements
- One-stop help desk for anything mundane to orienting/graduating matters
- Accommodating atypical student circumstances
- Moral Support!

Is there any additional information you would have liked to be included in the graduate student orientation?

- A better explanation of how funding is actually distributed and how the equivalent yearly salary is calculated (i.e. low income during semester and high summer compensation) might be nice.

- Samples or sets of recommended courses that can lead to certain specialization OR simply as recommendations of the courses to take in the years to come. Almost like a checklist or recommended path to graduation?

- It would have been nice to see some schedules current students have had. The advice I heard from some faculty members ranged from taking 9 credits in the first semester to as high as 15 credits (which is unreasonably high).

- Information about some workshops to handle stress and depression provided by CAPS or GPSC
Industrial Affiliates

How would you rate the usefulness of student participation in the Industrial Affiliates program?

- Exceptionally Useful: 20%
- Occasionally Useful: 24%
- Could be more Useful: 9%
- Not Worth Participating: 47%

Average: 3.56/5.00

Do you feel that you have been adequately informed about the avenues of involvement in the program?

- Well Informed: 41%
- Adequately Informed: 10%
- Could be more Informed: 9%
- Not Informed: 4%

Average: 3.85/5.00

What would be your preferred mode of interaction with the affiliates during the workshop?

- Through social events: 33%
- Listening to industry presentations: 33%
- Giving research presentations: 22%
- Poster sessions: 9%
- Other (please specify): 4%

Other Modes of Interaction?
- I liked the Expert Panel this year, with advice on applying for jobs from their perspective
- It might be nice if the Industrial Affiliates themselves had a poster session once in a while

Alternatively, do you feel that there is enough information and support in seeking employment that is not industry related (e.g. academia)?

- No, there is not enough information: 82%
- Yes, there is adequate Information: 18%

• There could be more of this, but I'm not sure how it would be formatted. Perhaps have university employers give presentations.

• I feel that most of the information and guidance from the academic office is centered on helping students to find industry jobs, with few resources for students who hope to find jobs in academia. Most of the information about academia comes from professors. Industrial affiliates is great if you want to find a job in industry but it is not really worth participating in if you aren't interested in industry.

• The comments that follow are a bit unfair because OSC does not "control" who its Industrial Affiliates are. However, I will make my point here anyway because I have wanted to do so for quite a while. The specializations in our department are very broad, but our industrial affiliates do not represent this breadth. I would generalize the affiliates as being predominantly "classical optics" type companies (e.g. lens design, optical metrology, etc.). This is great, but should we not also have affiliates at companies in the fields of medical imaging, laser physics, quantum optics, etc.? If this were the case I think that the IA program would be of much more use to graduate students. Currently I would say that IA is geared towards undergraduates. Again, this is not meant to be criticism of our IA participants or the program, rather it is meant to encourage finding additional IA members in some of the other fields represented by the entirety of our student body. Easier said than done, I'm sure.

• Comment on industrial affiliates workshop: I have been very involved with the industrial affiliates program for 4 years. As a graduate student in my 4th (I am not planning on graduating in the near future) I feel that the industrial affiliates program is not useful to me personally. Affiliates mostly interact with undergraduate students and specifically undergrad/grad students nearing graduation. I think it's important that students have reasonable expectations when volunteering to help with industrial affiliates. Anabel has worked incredibly hard and done an amazing job at highlighting the students during these workshops, but it has been my experience that many of affiliates are more interested in catching up with each other than interacting with students. This is not a criticism and I don't have a great way to solve this problem. It's merely an observation.
Department Questions

How would you rate the quality of advising provided by your research advisor?

Average: 3.84/5.00

- Exceptional: 18%
- Good: 44%
- Adequate: 5%
- Needs Improvement: 28%
- Poor: 5%

How effective do you feel communication is within the department? (e.g. event notifications, resource requests, etc.)?

Average: 3.72/5.00

- Exceptional: 30%
- Good: 43%
- Adequate: 18%
- Needs Improvement: 5%
- Poor: 8%

What is the best way to notify you of an event?

- Individual event reminders: 54%
- Aggregate weekly email (Watts Up?): 33%
- Flyers around the building: 8%
- Other (please specify): 5%
- Other Modes of Notification?
  - A shared Google calendar with all the events listed in it.
  - Way too many emails go out to distance students that do not apply to us.

What do you feel is the Top Strength of the graduate program at the College of Optical Sciences?

- I think for most people it is the breadth of classes offered. Many people from many different backgrounds can come out with a solid education in a specialized field.
- I feel our top strength is that our faculty (in many cases but not all) care as much about their teaching as they do their research. All of the faculty has excellent research labs; a handful of the faculty put as much effort in to their students education as they put into their research. I think that is rare among graduate programs.
- It is the most student-friendly college I've ever dealt with, largely thanks to Gail and Ruth. I don't think I've ever had a question/request that they couldn't help me with.
- Lots of connections to industry and a broad range of research.
- Being strong in geometrical optics field of research
- Broad research and class topics, knowledgeable professors, high quality education, an active student community, interdisciplinary research efforts, many great talks and presentations, resources for employment and scholarships
- It's well organized, sociable, and well funded.
- Professors that really care about their students and their teaching. With two exceptions, I would say that the quality of teaching here at the College of Optical Sciences is equivalent to that of my undergraduate institution (a top rated liberal arts college).
- Depth of education (student labs are great, distance learning is fantastic), well respected in academia and industry, close relationship with industrial partners.
- I didn't really give much thought to whether a program concerns itself with the health and well-being of it's students when I was being recruited, but I've found that it's a major positive. Offering health coverage at no cost to unmarried graduate students has proven to be a blessing since I've enrolled in the program.
What do you feel is the Top Weakness of the graduate program at the College of Optical Sciences?

- I think the desire to grow the program and maintain high academic standards are inversely proportional. I think the focus should be on keeping the product quality high.
- I think that at times the academic program suffers because it is so broad, and that students might benefit if the different areas (optical physics, engineering, photonics, and image science) were given more autonomy over things like the comprehensive exam, and number of required courses.
- Hard to work up the courage to approach some of the staff and faculty
- Due to the large number of graduate students, I have little on-on-one time with my advisor.
- Start to become too crowded with not enough funding for everyone. When first year students have to TA (you need experience to feel good about the material you are teaching), and some students who signed up for TA positions could not get one, there is a problem.
- I personally think we focus too much on engineering based curriculum. A few more classes in theoretical optics and AMO would be very helpful to the 4-5 research groups that focus on that area.
- If anything I’d say the teaching is a weakness. The professors are probably overwhelmed with their teaching and research agendas, and some of them don’t prioritize teaching as much. The teaching is definitely good overall, but compared to other aspects of the college it’s the weakest point.
- Lacking in courses for many relatively new optics such as ultrafast optics, image reconstruction, electronic control/computing courses specific for optical instrumentation. Would suggest doing an online pre-recorded course and re-use it for multiple semesters if enrollment is small and have instructors available for office hours.
- Lack of labs related to other fields, such as programming, microprocessor integrated with optics, biomedical optics...
- Quality of students - I have been frustrated in the past by the relative weakness of some students' preparation for the classes being taken.

Is there any Additional Feedback you would like to provide that has not been addressed in this survey?

- Both 502 and 510 could use an overhaul in terms of the way in which the material is presented. Both courses cover useful material but it wasn’t really worth going to class.
- Equipping students with up to date advancements/projects that the college has with industrial/national partners. This spikes up interest among students and maintains as a good marketing media through her students.
- More opportunities for international students. Just make sure everyone who is admitted in the future can be funded.
- I think that a little transparency into how much of the graduate curriculum is directly influenced by members of the industrial affiliates is necessary. I can’t help but suspect that the industrial affiliates would be granted some leverage in determining which courses I need to take in exchange for their $$. I don’t have any intentions of working for any of the companies, which are the biggest supporters of this program, so why would I want them determining which courses I should take?
- There need to be better independent resources available for dealing with issues that arise between students and their academic advisor
- To do optics research effectively, more courses from electric engineering and computing need to be offered and tailored to the needs of optics students. The focus in the courses in other departments might not be right for us - or too difficult for us.
- Any complaints voiced above pale in comparison to the pride I feel at being able to work toward my Ph.D. at Op. Sci. The program may not be perfect at points, but it is still very, very good.