

Recruiting Students

At the end you will be encouraged to fill out a survey in regards to the proposals herein; however, the survey will be useful to fill out as you are reading through this document:

<https://forms.gle/4Ka1AQJyhi2Ri6sd8>.

The College is growing! That is great, but there are growing pangs that come along with that: we need more space (a new building is going up), we need more professors (we are in the process of hiring 14+ endowed chairs along with a number of junior professors), we need more staff (that comes as the College gets larger), and we will need more students (undergraduate and graduate). The latter part of the growth plans – increased student body is the facet in which the College has the least control. We need to market the program, provide a good experience for the students, and ensure the path to graduation. There has been a wealth of talking behind the scenes amongst the staff, faculty, and so forth, but we have not really talked to you the students. In last week's Light Bytes we reached out to you, the undergrads, to see if you wanted to participate in an ad hoc committee to discuss for an hour or two some of the suggestions we already have in house, but mostly we wanted to listen to you about how can we address our desired growth effectively. I heard back from a few of you, and I heard some excellent ideas. In the remainder of this column, I will discuss some of the ideas we already have, point you to a survey about such while also encouraging you to submit ideas, and so forth.

The elephant in the room is that virtually no one knows what the field of optics / optical engineering is. Optics is not a typical field in the academic world – you could count on both of your hands the undergrad programs that are out there in the US. However, there is such a demand for individuals trained in optics – we and our sister programs cannot graduate enough. The reason for this is because it is often stated that we are in the fourth industrial revolution – the one in which the photon dominates. So, we are caught in a catch-22 – how do we get more people to considering an education and/or career in optics but they do not even know the academic degree exists. Most think optics is eyeglasses (it even happened this week – we were asked if optics was about eyeglasses). I can almost hear your eyes rolling (under your eyeglasses) and the scream that optics, the study of light, is so much more. We have also heard through the grapevine that the BSOSE is perceived as one of the hardest degrees on campus – is that true and is there anything we can do about such?

Now that I have finished my rant, here are the proposals that have been discussed already in the non-student ranks of the College. Additionally, I have provided some thoughts on most of them and their status:

- The College of Engineering has been charged to explore increasing the size of their undergraduate cohort, so the B.S. in Optical Sciences and Engineering will naturally recruit more undergraduates. [all good here]

- OpSci's website needs to be improved – modernized, and includes better pages on research, patents, publications, press releases, etc. [a new OpSci website is being developed and will be released soon]
- Marketing needs to be increased, such that more information is provided to high schools and guidance counselors, we visit high schools and talk up optics, more and better “swag” that can be given away at events. Simply, get out and do more recruiting. [our marketing is primarily through educational outreach (see below), so we can do more of this up to personnel limits. We have been discussing a reward program, such that if students go out and present about our program, and a new student is recruited from it, then the student gets a “finder fee”]
- Online BSOSE degree is possible. The online MS degree has shown that we can deliver undergrad coursework likewise, and the pandemic backed up these sentiments. The primary issue is required labs, so this past summer, right before Fall semester, we held OPTI 201L and OPTI 202L for some students that needed such. The labs were completed in three weeks with the students doing typically two labs per day. [it works, but there are space limitations due to how we like to deliver online courses. Is there demand? A survey should be done]
- Add new tracks is Optical Physics (increased science content), Entrepreneurship (for the business-minded optical engineer), Astronomy/Space Sciences (for the space-minded optical engineer), and so forth. [this week we submitted the Optical Physics and Entrepreneurship tracks. What additional ones could we look at?]
- New degrees in Optical Sciences (solely within OpSci for those who are interested in the physics side of optics) and Optomechanical Engineering (joint with the College of Engineering – a separate degree for those who want to understand both the mechanical and optical engineering aspect of optical systems). [discussions are ongoing]
- Outreach is healthy in the College with many groups including SOCK, WiO, CQN, Academic Programs, OPTI 495/595, and so forth invested in going out to local schools. [we will continue actively visiting schools, but we need to survey its utility. We are looking at grander scale through virtual outreach by developing videos, i.e., the TikTok Outreach Challenge!]
- Summer Optics School is analogous to the Optics Winter School to meet with potential graduate students. This program would invite high school students to come and learn about optics, work in the labs, and so forth. [for the Optics Winter School in January 2022, we are inviting community college students who may want to join our undergraduate program, and we are inviting some local high school science teachers]
- Research courses that start in the sophomore year and go through the senior year. This type of program is called a CURE, aka course REU (Research Experience for Undergraduates). In these courses you would be first introduced to how to conduct research, tour the College's labs, meet with the faculty, and then be placed in one of the research groups. There would be yearly poster / presentation events so that you could present your research to the OpSci campus. [we are in the process of developing such, which we may limit first to Honors' students]

- Community college outreach and articulation such that we can develop a better process for students wanting a 2+2 plan to get their BSOSE. [talking to such colleges including Monroe Community College, Pima Community College, and Pasadena City College]
- The difficulty of the degree is challenging, especially since there is the love/hate for such. We demand a lot of you and the field of optics is often quite challenging, and the general thought is that you may not fully welcome such difficulty but you appreciate what it is doing for you. We also hear back from those who hire our alumni, and they say students from here are rock solid. [we are looking at greatly reducing course prerequisites so that being slowed down is not as likely if you stumble in a course]
- Other ideas in discussion or completed:
 - Community optics project: yearly group project such as daylighting the student cubicles, illumination of SUMC clock, etc. [discussion]
 - Undergraduate newsletter [completed – you are reading it]
 - Accelerated MS program [has been working for a couple years]
 - Increased courses in the lower division [OPTI 100H – What is Light? was created, but its growth has been slow and more needs to be done]

As you can see we have a number of plans being considered, and while some are in their early stages, we do not know yet the efficacy of them. Additionally, it is much better to hear from you – you are in our program, so your personal experiences and your ideas are what we need to hear. In response to last week’s Light Bytes, there were a couple responses:

- The lecture we do in ENGR 102 could be changed to introduce you sooner to the research that is being done in OpSci. When you visit for the Open House you get to meet students and professors who are doing optics. We have found that hearing from the students, especially current undergrads or previous undergrads who are now grad students, is the most educational and beneficial. The current lecture, while good, does not show the passion, excitement, and rewarding aspects of optics.
- A “big bash” at the start of an academic year to introduce students to the College of Optical Sciences. One OSC group is looking at working with The University of Arizona and the Astronomy Center to sponsor this welcome-back event. This welcome-back event will be "presented" by the Wyant College of Optical Sciences and the other groups, and it consists of a laser-light show and DJ on the UA mall right in front of the Optical Sciences building.

We want to hear your thoughts about all of these proposals and welcome suggestions for others. How useful will they be? Will they be educational? What? So, we created a survey at: <https://forms.gle/4Ka1AQJyhi2Ri6sd8>.

Photon Snacks is a column for Light Bytes edited by John Koschel, Associate Dean for Undergraduate Affairs in the Wyant College of Optical Sciences. You can find the previously written articles at <https://wp.optics.arizona.edu/jkoschel/photon-snacks/>. Additionally, make suggestions for articles (or even write one!) by emailing jkoschel@optics.arizona.edu or by visiting the survey anytime at <https://forms.gle/ibC9LhPemeniJwhv9>.