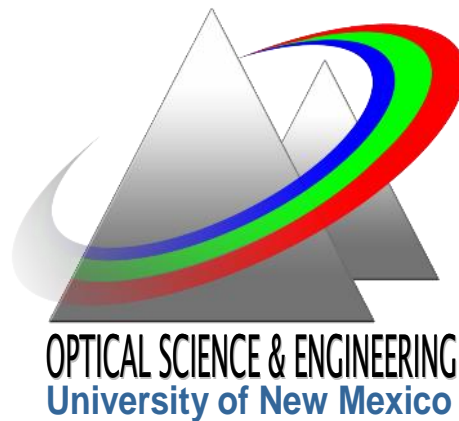


The University of New Mexico

Pandemic Addendum Report for the Optical Science and Engineering Program's Self Study

An Academic Assessment of the Optical Science and
Engineering Program.

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Pandemic Addendum Report for the Optical Science and Engineering Program

I. General Response to the Pandemic

The University of New Mexico, (UNM) and the Optical Science and Engineering, (OSE) Program assembled a strong response to battle the spread of the virus and to concurrently carry out the university's teaching mission and daily operations.

A. The University's Overall Pandemic Response

The University of New Mexico, like many of its peer institutions, has been dealing with the COVID pandemic since March 2020. With the first cases on campus reported around that time, the University has put into place a robust effort to combat the spread of the virus and to simultaneously ensure that the teaching mission is fulfilled. The University of New Mexico, is fortunate to have a world class hospital and trauma center as part of the campus and has been able to leverage this facility to the benefit of the student, staff, and faculty community during the pandemic. In the first communication by the senior leadership to the UNM community on March 9, 2020, the university implemented most of the Center for Disease Control's (CDC) recommendations and has since been following the guidelines of the agency for vaccination protocols and in dealing with evolving strategies in the face of more deadly variants of the virus. The campus has been following all distancing and sanitation protocols and the virus has been in control on campus. More recently in Fall 2021 the campus enacted a vaccine mandate requiring all faculty, staff, and students to be vaccinated to be allowed on campus. The campus vaccination dashboard can be found at <https://covid.unm.edu> and as of 10/13/2021 shows 96% of faculty, 94% of staff and 85% of students to be fully vaccinated.

1. Academics and Course Instruction

By mid-March of 2020, the university had made the decision to limit its operation and instruction. The senior leadership of UNM had decided that academic courses would continue to transition to fully remote instruction as much as possible. The UNM spring break (spring 2020) was extended to give professors time to transition their courses to remote learning and to give students time to secure laptops and internet access. The university also provided laptops and internet connectivity for students who could not afford these necessities for remote learning. In-person group educational experiences were replaced with other forms of instruction or in some cases were eliminated. The university also ensured that students who were approaching graduation would be able to receive their degrees in a timely manner. In late March of 2020, the UNM Faculty Senate developed a resolution to address the issues of grading and granting of course

credit for the Spring 2020 term. As of Fall 2021, a certain level of normalcy has been restored with all classes returning to in-person instruction.

2. Research Facilities:

To assure the safety and well-being of students, the Office of the Vice President of Research, (OVPR) restricted the presence of students in university research facilities in April of 2020. Students were not permitted in research laboratories, to work on clinical trials, or perform in-person community-based research. This on-campus research facility restriction remained in place for Summer 2020. In Fall 2020, laboratories across the campus were allowed to resume operations with social distancing, PPE (Personal Protective Equipment) usage and limited occupancy.

3. UNM Operations:

Operationally, the university rolled out various limitations on its business and services. By March of 2020, the university introduced its three-tier employee categorization which was designed with the help of the UNM labor unions. Specifically, tier one represented essential workers who would report to work on campus, tier two were workers who would work a hybrid schedule (mostly working remotely, but occasionally coming on campus), and tier three workers were people who work remotely only or were people with high-risk health conditions that did not allow them to work during these limiting measures. The goal of the tier employment system was to lessen the footprint of workers on campus and to slow the spread of the virus while continuing to keep the university open for business.

This three-tier employment categorization still exists within the university after more than 18 months (about 1 and a half years). The university found that they were able to instruct, educate, transact business, admit, and graduate students during this truncated and remote operations period. In short, the university was able to carry out its normal duties albeit remotely.

4. Mental and Physical Wellness:

a. Student Mental and Physical Wellness Programs During the Pandemic

The university created opportunities for students to have access to several resources that would ensure mental and physical wellness during the pandemic. There were two major units that help facilitate these student pandemic wellness initiatives – The UNM Graduate Studies - Graduate Resource Center, (GRC) and the UNM Student Health and Counseling Services, (SHAC).

The GRC helped the UNM graduate students during the pandemic. The GRC offers centralized academic support services available to all graduate and professional

students in one team and one location. The GRC's mission is to demystify the graduate school experience through peer support, resources, outreach, and support for the graduate application processes. Specifically, during the pandemic, the GRC offered students with Teaching Assistantships assistance with the transition to remote teaching of any capacity and technical or pedagogical support via the Center for Teaching and Learning (Website: <https://ctl.unm.edu/>). Moreover, the GRC supplied students with academic support in the areas of finishing one's dissertation/thesis, adjusting research, or writing timelines, and developing new time management strategies as students work from home via their dissertation coaches, writing consultants, statistics consultant, and Graduate Online Writing Lab (GrOWL): <http://unmgrc.unm.edu/> and <http://unmgrc.unm.edu/support-services/growl.php> . Finally, the GRC provided resources to help students who may be struggling financially during the pandemic. Specifically, the GRC empowered students with advice on budgeting, taxes, or other financial matters, via the Center for Financial Capability: <https://cfc.unm.edu/index.html>. The GRC also addressed food insecurity by providing students and their families with assistance with food or other necessities, by referring them to the Lobo Food Pantry: <https://loborespect.unm.edu/services/campus-lobo-food-pantry.html>. The Lobo Respect Advocacy Center operated this pantry throughout the 2020-2021 year with weekly hours during the height of the pandemic surges. Now that the pandemic's impact has waned in the Fall of 2021; the Lobo Food Pantry operates bi-monthly or monthly.

The SHAC office also offered services to graduate students during the pandemic. The SHAC office provides medical and counseling services to all students. Its mission is to enhance the wellbeing of students through access to the highest quality health care, education, and advocacy. The student health center provided online and in person appointments for medical and counseling services. In counseling, students could receive both therapy sessions as well as psychiatric help. Counseling Services are available to all enrolled UNM Main Campus students to help them function successfully in their academic lives. When students are challenged by excessive stress or difficult personal problems, psychological and/or psychiatric support may be helpful or necessary. During the essential isolation implemented due to the pandemic, the need for counseling services was evident. The SHAC office was able to help the UNM graduate students during this time.

b. Faculty and Staff Wellness Initiatives During the Pandemic

The university in conjunction with labor union initiatives created mental and physical wellness plans and incentives. The university continued to send out communication to the workforce and students that emphasized social distancing does not mean social isolation. Employees and students were encouraged to look for ways to stay

mentally and emotionally healthy during this trying time. The UNM community was directed to utilize counseling services, students were encouraged to contact Student Health and Counseling Services, while faculty and staff were urged to consult with Counseling, Assistance & Referral Services.

The UNM management afforded workers additional sick leave up to 80 hours (about 2 weeks) for the COVID-19 illness. This additional benefit decreased the stress that some people may have felt because they had low sick leave banks before the pandemic and could not afford to stay home when sick and/or quarantine. Moreover, UNM management gave workers additional annual leave/vacation time up to 56 hours. This increased benefit allowed employees to take time off and to reconnect with family and friends albeit in a socially distanced way. Both benefits (additional vacation time and COVID-19 sick leave) are still in place in 2021.

B. OSE Program's Response to COVID-19

The Optical Science and Engineering, (OSE) program's response to the COVID-19 pandemic mirrored the university's overall response. The OSE faculty and staff immediately implemented virus mitigation protocols outlined by the university and the CDC. The OSE faculty, staff and students began to implement hygiene protocols, social distancing, travel restrictions, event cancellations and eventually masking protocols introduced by the CDC. Moreover, the OSE faculty after spring break taught most of their courses remotely or in a hybrid format.

The OSE program also offered specific waivers and support to the student admissions process. Specifically, the program decided to waive the Graduate Record Examination, (GRE) requirement for admission for the Fall 2020 and Spring 2021 applicants. The OSE Committee decided that the cumbersome logistics in taking the exam and the undue financial burden caused by the global pandemic called for this unprecedented change for this unprecedented time. Furthermore, the program decided to pay all UNM application fees for Fall 2020 and Spring 2021 applicants. Once again, the undue financial burden caused by the pandemic facilitated this change.

The OSE operations continued to function remotely. Students were still able to receive academic advising via phone and Zoom appointments. The program's business transactions and day-to-day operations were carried out without neglect during the pandemic. The program administrator/advisor was able to administer the business of the program remotely and still meet with the internal and external constituencies of the program. The OSE advisor was able to contact each student during the pandemic and check-in with them. These wellness meetings were a way for the program to ensure the

students' emotional and academic well-being was being addressed with resource referrals and aid. During the pandemic year, most students continued with their academic studies in the OSE program. There were some who opted for a leave of absence during this time.

II. General Course Modality Shifts with COVID-19

The OSE program adopted unique general-course modalities during the pandemic to ensure safety for the UNM Community and to ensure that the programmatic functions of course instruction were carried out. Below are some of the course modalities the OSE program implemented.

A. Uniqueness of Laboratory Classes During the Pandemic

The OSE's laboratory classes were able to function during the pandemic. With strict social distancing and COVID protocols in place, students were able to complete all aspects of their laboratory work.

Research for graduate students was a bit more complicated. With OSE's research primarily conducted in the Physics & Astronomy and Interdisciplinary Science, (PAIS) building and the Center for High Technology and Materials, (CHTM), the policy of these organizations was used to guide research activity. The largest impact on research was felt between March and July 2020, with activities starting to ramp up in August 2020 and returning to full normalcy by 2021.

B. Lectures

As mentioned in the paragraphs above, most lectures were transitioned to a remote format in Spring 2020 and continued to operate in this manner in Fall 2020 and Spring 2021. However, in Fall 2021 classes have returned to the in-person format. We have not yet been able to fully understand the impact of remote classes on student preparation.

C. Examinations

The regular course exams, to our knowledge, have not suffered because of the pandemic. The one caveat to this statement is that a comprehensive assessment of the program during the COVID pandemic has not yet been completed.

Administering the qualifying exam during this period, however, was difficult. In Summer 2020 for the first time in the program's history, students were given the option to skip the qualifying exam. This option was exercised by most of the students. Subsequently, in 2021, the exam was administered and with the considerable time that had elapsed between taking courses and writing the exam, this instance of the exam recorded some

of the worst scored and pass rates to date. The OSE committee is currently analyzing the exam results to better understand this issue.

III. Reality of the OSE Program During COVID-19

The pandemic's effects had consequences on key programmatic metrics for the OSE program. We will take each metric in turn.

A. Admissions

The OSE program's admission process during 2020 was impacted by the pandemic. A combination of travel restrictions in the face of the pandemic and the closure of US embassies around the globe meant that international students were not able to secure visas to make the trip to the US. This resulted in most international students deferring their admissions. The admission of domestic student was not impacted during this period. It should however be pointed out that with the easing of restrictions on international travel, the OSE applicant pool numbers recovered in the Fall 2021 term to 40 applicants as opposed to the pandemic lows in the 20s.

B. OSE Enrollment During the Pandemic

There were no significant changes to enrollment numbers during the pandemic. The OSE program saw some decrease in enrollment due to international students deferring admissions. Also, a few students decided to take leave of absences during the pandemic to attend to family and personal concerns.

There were several factors that contributed to the steadiness of the enrollment numbers. First, the graduation rates for OSE were slowed during the pandemic. Second, the national labs and industry helped keep the OSE numbers sustained because many of these US students were not encumbered by visa requirements or in need of assistantships. The national labs in conjunction with our alumni continued referring students to our program and these actions supported the OSE program's enrollment. Third, in 2021, the international travel bans, and visa processing began to pick up in earnest and we saw our applicant pool increase slightly. Overall, despite the pandemic, the OSE program has been able to sustain its enrollment. From 2000-2009, the average enrollment for the program was 47.2 students. From 2009-2018, the average enrollment was 61.8 students with 57 students enrolled in the Fall of 2019, 51 students enrolled in the Fall of 2020, and 56 students enrolled in the Fall of 2021 with two students on a leave of absence.

C. Graduation and Degrees Completed During the Pandemic

The OSE program's graduation and completed degrees metrics were impacted by the pandemic. The program saw fewer students graduate in 2020-2021. This can be attributed to a lack of access to laboratories which in turn limited student research. Students also expressed concern in testing the job market during the pandemic and in many cases decided to extend their program at UNM.

D. Research During the Pandemic

Based on some cursory analysis, such as data provided by CHTM, OSE faculty have continued to enjoy success in both grant procurement and publications. The closure of some experimental facilities and the limited occupancy in others has adversely affected students. This has resulted in delayed PhD defenses for more advanced students, but the most affected were the newer students whose training was significantly delayed. Also, most experimental labs involve a hierarchical structure with more senior students mentoring the junior ones and this type of a process is not possible with limited laboratory access. However, we believe that with the easing of most restriction and the vaccination of the students, a certain sense of normalcy is returning to student research.

IV. Updated Organization Changes and Discussion on Personnel

Decisions/Departures

The OSE program experienced personnel and organizational changes through the pandemic period.

A. Updated Organizational Chart

An updated organization chart has been provided below in figure 1. The OSE committee now consists of the existing members - Prof. Sheik Bahae, Prof. Cavallo, Prof. Drake, Prof. Feezell, and a couple of additional members including Prof. Habteyes and Prof. Becerra. It should be noted that Prof. Habteyes is the first member of the committee outside of Electrical Engineering and Physics and Astronomy and this demonstrates the expansion of the OSE program to involve other departments such as chemistry in this case.

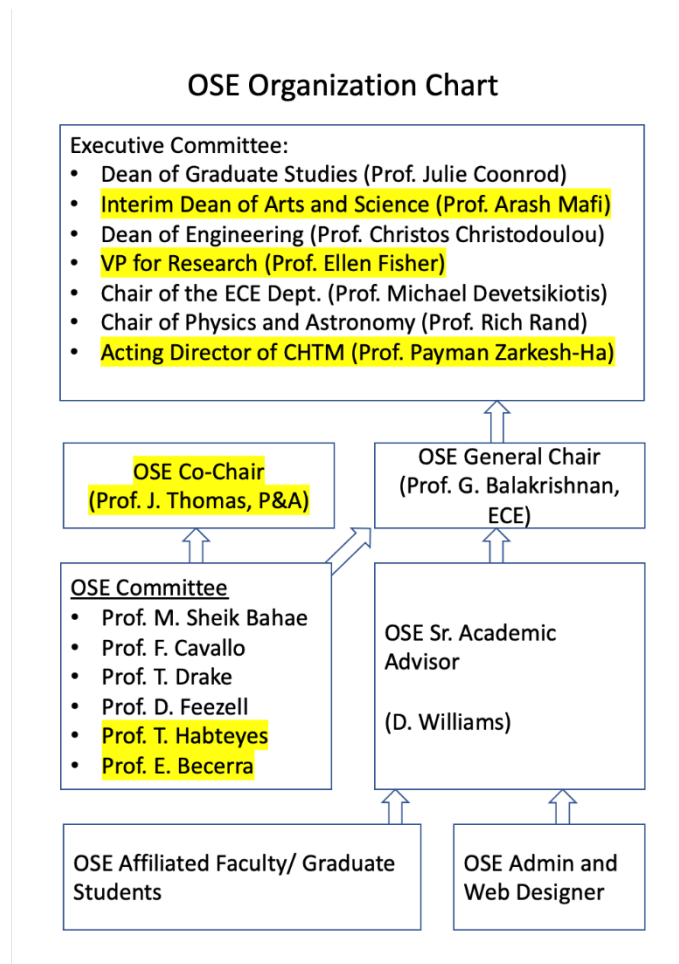


Figure 1. OSE organization chart. Highlighted names indicate changes in the past year.

B. Impact of Retirements and Departures During the Pandemic on the OSE Unit

The OSE program saw some programmatic impacts due to the retirements from the university. Prof. Ravi Jain retired at the end of Spring 2021. This does leave a gap in OSE's expertise in fiber lasers. While the position will not be immediately replaced, the prior director of CHTM and the current Interim Dean of Arts and Science, Arash Mafi is formulating plans for hiring an assistant professor in this field.

C. Impact of Hiring and the Hiring Freeze During the Pandemic on the OSE Unit

The hiring freeze during the pandemic has caused some issues with the teaching mission of the OSE program. These issues are more pronounced on the ECE side. As a temporary measure the teaching of OSE courses has been shifted to PANDA faculty. We hope that with the lifting of the freeze in faculty hiring, some key departures including Prof. Mani Hossein-Zadeh and Prof. Ravi Jain will be addressed.

V. Outcome Assessment Report During the Pandemic

The OSE program did not participate in its yearly outcomes assessment during the pandemic because the program's Academic Program Review, (APR) site visit was placed on hiatus. In March of 2020, the OSE program was scheduled to have its site visit. One week before the meeting, the visit was cancelled due to COVID-19 and travel restrictions within the United States. Since the virus was novel, many believed a site visit could be rescheduled by the Fall of 2020 at first and later by the Spring of 2021. In the end, the pandemic surges delayed the OSE APR meeting until the end of October of 2021. The uncertainty of knowing if the OSE program would be having its site visit scheduled at "any time" made doing an outcomes assessment report for 2020 and 2021 challenging. The program decided not to do an outcomes report because it believed that the APR visit would be scheduled "very soon." Moreover, the program was uncertain on how to address the fluctuating outcomes caused by this once in one hundred years pandemic. Fortunately, the APR visit was scheduled, and the program has this pandemic addendum to address the data anomalies caused by the virus effects.