2018 SPIE ANNUAL REPORT

Étendue: The UNLV Student Optics Chapter

University of Nevada, Las Vegas SPIE Student Chapter

May 1, 2018

Prepared by:
Russell Pinnegar, President  Astrid Miller, Vice-President
Dale E. Karas, Secretary  Stephanie Molina, Treasurer
Cilla Jose, Communications Officer  Hannah Flower, Outreach Officer
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0.1 PROLOGUE

Étendue, The UNLV Student Optics chapter, was formed in the Spring of 2016, initially representing students of SPIE (The International Students of Optics & Photonics) and OSA (The Optical Society). As colleagues in research fields using optics, the founding members of the SPIE student chapter consisted of researchers in solar and nuclear energy, as well as lab members of security science & engineering, specializing in optical communication systems and various detector technologies. The following e-mail record forged student interest in starting the chapter:

...sometime in the past few weeks or months, we talked about the formation of a student optics chapter here at UNLV! While the objective is not to necessarily burden members with student organization/UNLV club-style responsibilities (as I know we’re all extraordinarily busy), the major goals are mainly:

1. Promote and increase optical science & engineering research, techniques, and culture here at UNLV
2. Catalog current analysis hardware and boost collaboration efforts among apposite UNLV STEM colleges
3. Design and implement new optical analysis hardware with research grants for which we’ll be eligible
4. Boost our output of research and publications, with improved opportunities we’re entitled to as a student contingent
5. Support access to optical software packages and hardware - this can include the ability to travel to other universities or companies for workshops or instrumentation usage!

The national organizations/societies from which we’re recognized are SPIE: The International Society of Optics & Photonics and OSA: The Optical Society. (This is comparable to the IEEE, APS, ACS, ASME student networks here at UNLV, though more of our interest is in promoting research endeavors and getting more publications out!) So far, we've already supported our library staff with a campus-wide initiative for subscription to the SPIE Digital Library (www.spiedigitallibrary.org), as well as various journal subscriptions from OSA. Upon corralling enough graduate and undergraduate student members, we have the opportunity to be recognized
by SPIE (and eventually OSA) as an official optics chapter, eligible for the following benefits: chapter activity grants, alumni network access, grants to attend the SPIE/OSA conferences in San Diego, San Francisco, etc., other travel grants to other universities, eligibility for fellowships/scholarships, optics “kits” for outreach, funds to host visiting lecturers for our engineering & science seminars, and more! This amounts to roughly a minimum $5000 annually that we're eligible to use!

We're privileged to have Prof. Ke-Xun Sun (Nuclear, Security, Optoelectronic, Sensing emphases) and Prof. Jaeyun Moon (Solar, Water Treatment, Environmental, Sustainable Energy emphases) who have expressed interest in acting as advisors to this student organization. The diversity and applicability of their research backgrounds will definitely give our chapter a big boost in solicitation when we attend the SPIE/OSA national conferences and present research, supporting recruitment efforts in framing UNLV’s rich culture in nuclear security and environmental science culture! We've so far already benefitted amazingly with student participation in building up new optical instrumentation, and we're happy to encourage other STEM students to participate so that we have collaboration with other STEM departments (biology, chemistry, physics, etc., or even some non-STEM ones as optics is pervasive!)

The following annual report details our record of events and activities we have accomplished thus far as a chapter, and many additional highlights from the chapter inception from Spring 2016, to the operating period of the Fall 2016 - Spring 2018 academic years.
Part 1

Introduction

Étendue is the UNLV Student Optics Chapter, representing student members and apposite research faculty/administration of SPIE: The International Society of Optics & Photonics, as well as OSA: The Optical Society. Our current officers for the 2017-2018 academic year are provided in Table 1.1:

<table>
<thead>
<tr>
<th>Russell Pinnegar</th>
<th>Astrid Miller</th>
<th>Dale E. Karas</th>
<th>Stephanie Molina</th>
<th>Cilla Jose</th>
</tr>
</thead>
<tbody>
<tr>
<td>President</td>
<td>Vice-President</td>
<td>Secretary</td>
<td>Treasurer</td>
<td>Outreach Chair</td>
</tr>
</tbody>
</table>

Of our total membership:

- We have 23 active members strong (an additional 12 are pending, 30 additional students subscribe to our news updates). We claim a total overall RSO (registered student organization) membership of 65 students, at least 50 of whom are undergraduates.

- Our chapter is a relatively new student organization with two years on campus thus far. However we anticipate longevity at UNLV given our support from SPIE & OSA, internally
from various STEM departments, and steady membership increases from sophomore and junior students.

• We do not collect dues at this time, but strongly encourage our members to become official student members of SPIE and OSA (a combined cost of $40), of which we’re more competitive for receiving grant funding based on our student-submitted proposals.

As membership with SPIE and OSA represents our affiliation with the optical sciences and engineering community, our mission is to assist chapter members in developing professionally and becoming engaged in academic research pertaining to optical system design, laser sciences, semiconductor fabrication, optical fiber technologies, remote sensing technologies, and computational optics. Further, our chapter believes in, and advocates for, the value of STEM education and diversity in the STEM community. Étendue fulfills this mission by facilitating undergraduate research opportunities, conference attendance, social events, outreach demonstrations, and lectures for the UNLV community on the optical sciences. We intend to expand our outreach demonstrations to elementary, middle, and high schools to encourage interest in optics, STEM fields, and enrollment at UNLV. This will feature getting UNLV undergraduates involved in supporting their community and learning state-of-the-art science and engineering practice.

In our past two years of activity, our members have attended multiple conferences, hosted two traveling lecturers (one from SPIE and one from OSA), and organized short courses related to spectroscopy and data analysis software. Our current faculty advisor, Dr. Jaeyun Moon, is dedicated to supporting our chapter. Additionally, she is warm-hearted towards undergraduates who desire to learn – she has kindly allowed qualified Étendue members positions in her lab, and allowed other members to interact with different instrumentation to bolster their experience.

We were provided funding through SPIE and OSA grants, as well as support from both the graduate and undergraduate student governments (CSUN, the Consolidated Students of the University of Nevada, Las Vegas and GPSA, the Graduate & Professional Student Association, respectively). These means of funding have fully supported our mission through the purchase of marketing items, outreach demonstration supplies, and materials necessary to host interdisciplinary workshops. We were also funded for conference attendance.

Our chapter primarily supports the following initiatives to students at The University of Nevada, Las Vegas:
• Career Networking - 1000+ Directory of Industry Executives & Educators

• Research Participation - Finding Laboratories, Participation with Instrumentation Training, Analysis Software Training for both STEM and non-STEM majors

• Conference Travel - Student Leadership opportunities at International Conferences

• Academic Support - Workshops, Study Materials Repository, Support from UNLV Libraries for Digital Collections Access and Technical Writing Support

• Social & Outreach Initiatives - Hosted demos at science fairs and schools; socials work in tandem with fundraising efforts

The following parts of this report detail our chapter finances, events, and future work we are to feature in successive years.
Part 2

Member Record

The following listing in Table.2.1 details the active members of our student chapter. According to respective roles:

- *subscribers* are classified as students, faculty, or staff who have signed up for our announcements and newsletter, as they have generally participated in at least one of our events

- *members* are classified as students, faculty, or staff who have participated in two or more events
  - Specifiers for SPIE or OSA denote membership in these respective organizations. Étendue officers and the chapter advisor are required to sustain membership in both SPIE and OSA.
## Table 2.1: Listing of all active Étendue: The UNLV Student Optics Chapter personnel

<table>
<thead>
<tr>
<th>Name</th>
<th>Role</th>
<th>Name</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Damian Aceres-Franco</td>
<td>Subscriber</td>
<td>Choonghan Lee</td>
<td>Member</td>
</tr>
<tr>
<td>Anna Agoha</td>
<td>Subscriber</td>
<td>Sophia Leon</td>
<td>Member</td>
</tr>
<tr>
<td>Daniel Ainsworth</td>
<td>Member</td>
<td>Emma Letourneau</td>
<td>Subscriber</td>
</tr>
<tr>
<td>Rachel Allen</td>
<td>Subscriber</td>
<td>Javier Llerenas</td>
<td>Member</td>
</tr>
<tr>
<td>Hunter Apke</td>
<td>Member</td>
<td>Mya Lofton</td>
<td>Subscriber</td>
</tr>
<tr>
<td>Kevin Ashi</td>
<td>Member - OSA</td>
<td>Jeff Markle</td>
<td>Subscriber</td>
</tr>
<tr>
<td>Evan Barber</td>
<td>Subscriber</td>
<td>Molly Marks</td>
<td>Subscriber</td>
</tr>
<tr>
<td>Cheryl Bella</td>
<td>Subscriber</td>
<td>Edgar Martinez</td>
<td>Member</td>
</tr>
<tr>
<td>Robert Buckles</td>
<td>Member - SPIE</td>
<td>Alejandro Marure</td>
<td>Member</td>
</tr>
<tr>
<td>Saria Bukhary</td>
<td>Member</td>
<td>Marian Mason</td>
<td>Subscriber</td>
</tr>
<tr>
<td>Matt Burbank</td>
<td>Member - SPIE</td>
<td>Yamileth Mejia</td>
<td>Member</td>
</tr>
<tr>
<td>Grace Busbuso</td>
<td>Member</td>
<td>Nicolas Michel</td>
<td>Member</td>
</tr>
<tr>
<td>Hector Carbajal</td>
<td>Member</td>
<td>Astrid Miller</td>
<td>Member - Officer</td>
</tr>
<tr>
<td>Rocio Castillo</td>
<td>Subscriber</td>
<td>Stephanie Molina</td>
<td>Member - Officer</td>
</tr>
<tr>
<td>Derek Castro</td>
<td>Subscriber</td>
<td>Jaeyun Moon</td>
<td>Member - Advisor</td>
</tr>
<tr>
<td>Lina Chato</td>
<td>Member</td>
<td>Rubaiya Murshed</td>
<td>Subscriber</td>
</tr>
<tr>
<td>Christian Childs</td>
<td>Member</td>
<td>Brendan O’Toole</td>
<td>Subscriber</td>
</tr>
<tr>
<td>Michelle Chiu</td>
<td>Member</td>
<td>Russell Pinnegar</td>
<td>Member - Officer</td>
</tr>
<tr>
<td>Gunnar Clovis</td>
<td>Subscriber</td>
<td>Fayt Raithwall</td>
<td>Subscriber</td>
</tr>
<tr>
<td>Stephen Comtois</td>
<td>Subscriber</td>
<td>Aaron Rine</td>
<td>Member</td>
</tr>
<tr>
<td>Joan Conway</td>
<td>Subscriber</td>
<td>Edgar Salas-Sanchez</td>
<td>Subscriber</td>
</tr>
<tr>
<td>Alivia Cordaro</td>
<td>Subscriber</td>
<td>Reanna Schiller</td>
<td>Subscriber</td>
</tr>
<tr>
<td>Geraldine Cowden</td>
<td>Subscriber</td>
<td>Justin Sih</td>
<td>Subscriber</td>
</tr>
<tr>
<td>Stefanos Droubalis</td>
<td>Member</td>
<td>Krishna Solasa</td>
<td>Member</td>
</tr>
<tr>
<td>Vanessa Esquivel</td>
<td>Subscriber</td>
<td>James Straughan</td>
<td>Subscriber</td>
</tr>
<tr>
<td>Jestin Estavillo</td>
<td>Member</td>
<td>Samuel Tam</td>
<td>Member - OSA &amp; SPIE</td>
</tr>
<tr>
<td>Mark Evaristo</td>
<td>Subscriber</td>
<td>Trevor Taylor</td>
<td>Subscriber</td>
</tr>
<tr>
<td>Jonathan Farias</td>
<td>Subscriber</td>
<td>Katherine Theriot</td>
<td>Subscriber</td>
</tr>
<tr>
<td>Hannah Flower</td>
<td>Member - Officer</td>
<td>Sarah Thorton</td>
<td>Member - OSA</td>
</tr>
<tr>
<td>Aaron Ford</td>
<td>Member</td>
<td>Thea Tibayan</td>
<td>Subscriber</td>
</tr>
<tr>
<td>Edward Friesema</td>
<td>Subscriber</td>
<td>Cirena Torres</td>
<td>Member - SPIE</td>
</tr>
<tr>
<td>Brandon Fuka</td>
<td>Subscriber</td>
<td>Hector Valencia</td>
<td>Member - SPIE</td>
</tr>
<tr>
<td>Abenezer Gessesse</td>
<td>Subscriber</td>
<td>Mario Valles</td>
<td>Member - SPIE</td>
</tr>
<tr>
<td>Wadih Hanache</td>
<td>Subscriber</td>
<td>Keith Vance</td>
<td>Subscriber</td>
</tr>
<tr>
<td>Donald Hayes</td>
<td>Subscriber</td>
<td>Fausto Vega</td>
<td>Subscriber</td>
</tr>
<tr>
<td>Isaiah Henry</td>
<td>Subscriber</td>
<td>Rama Venkat</td>
<td>Subscriber</td>
</tr>
<tr>
<td>Thomas Hocker</td>
<td>Subscriber</td>
<td>Mario Verduzco</td>
<td>Subscriber</td>
</tr>
<tr>
<td>Omo Igbindedion</td>
<td>Member</td>
<td>Vikas Vinayaka</td>
<td>Subscriber</td>
</tr>
<tr>
<td>Julian Johnson</td>
<td>Subscriber</td>
<td>Kirk Vigian</td>
<td>Member - SPIE</td>
</tr>
<tr>
<td>Cilla Jose</td>
<td>Member - Officer</td>
<td>Sue Wainscott</td>
<td>Subscriber</td>
</tr>
<tr>
<td>Rudolf Jovero</td>
<td>Subscriber</td>
<td>Curtis Walkons</td>
<td>Member</td>
</tr>
<tr>
<td>Dale Karas</td>
<td>Member - Officer</td>
<td>Alex Whitaker</td>
<td>Subscriber</td>
</tr>
<tr>
<td>Kwang Kim</td>
<td>Subscriber</td>
<td>Liuba Williams</td>
<td>Subscriber</td>
</tr>
<tr>
<td>Subba Kodigala</td>
<td>Subscriber</td>
<td>Austin Nyigo</td>
<td>Subscriber</td>
</tr>
<tr>
<td>Sally Lee</td>
<td>Member</td>
<td>Robin Yuan</td>
<td>Subscriber</td>
</tr>
</tbody>
</table>
Part 3

Operating & Financial Record

Of the benefits to our status as a registered student organization at The University of Nevada, Las Vegas (UNLV), we have access to the following internally on campus:

1. Eligibility to apply for funding – registered student organizations have multiple opportunities to apply for financial assistance for official RSO business, activities, and initiatives. For in-depth instructions, details and policies, please see the finances and insurance page.

2. Access to student organization specific email and web accounts.

3. Ability to have an on-campus mailbox and storage, via Student Engagement & Diversity – Student Organization Resource Center (SORCE).

4. Participation in campuswide events, including Homecoming, Involvement Fair, and RSO Leadership Seminar.

5. Ability, by request, to promote events on the campus wide UNLV Event Calendar.

6. Inclusion in the RSO directory.

7. Consultation with Student Engagement & Diversity staff members to assist with organizational issues, conflict management, and university policy.

While founding documents are listed in the report appendix detailing chapter policies, Table.3.1 shows the financial record for grants provided to our organization from SPIE, OSA, and other internal support.
Table 3.1: Summary of finances from internal & external grants, featuring support for academic initiatives, demo items, marketing materials, and conference budgets

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Line</th>
<th>Item</th>
<th>Quantity</th>
<th>Total</th>
<th>Extended</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Academic</strong></td>
<td>1</td>
<td>Technical Workshop (MATLAB)</td>
<td>3</td>
<td>$100.00</td>
<td>$300.00</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>UNLV STEAM Book Club</td>
<td>15</td>
<td>$15.30</td>
<td>$179.50</td>
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<tr>
<td><strong>Demos</strong></td>
<td>3</td>
<td>Fresnel Lenses</td>
<td>1</td>
<td>$100.00</td>
<td>$108.25</td>
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<tr>
<td></td>
<td>4</td>
<td>Schlieren Imaging Setup</td>
<td>1</td>
<td>$150.00</td>
<td>$162.38</td>
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<tr>
<td></td>
<td>5</td>
<td>Laser Radio</td>
<td>1</td>
<td>$9.80</td>
<td>$10.61</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>Laser Projector (Dirty Water Droplet)</td>
<td>1</td>
<td>$15.00</td>
<td>$16.24</td>
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<tr>
<td></td>
<td>7</td>
<td>Laser Pointers</td>
<td>3</td>
<td>$25.00</td>
<td>$81.19</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>Camera (Schlieren Imaging)</td>
<td>1</td>
<td>$69.99</td>
<td>$75.76</td>
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<tr>
<td></td>
<td>9</td>
<td>Mirascope</td>
<td>1</td>
<td>$7.56</td>
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<tr>
<td></td>
<td>10</td>
<td>Radiometer</td>
<td>1</td>
<td>$11.99</td>
<td>$12.98</td>
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<tr>
<td></td>
<td>11</td>
<td>Fiber Optics</td>
<td>1</td>
<td>$9.79</td>
<td>$10.60</td>
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<td></td>
<td>12</td>
<td>Euler Disk</td>
<td>1</td>
<td>$33.99</td>
<td>$36.79</td>
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<td></td>
<td>13</td>
<td>OptiMax Shipping</td>
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<td>$50.00</td>
<td>$108.25</td>
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<td>14</td>
<td>UC Buffalo Shipping</td>
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<td>$50.00</td>
<td>$108.25</td>
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<td></td>
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<td>Metal Salts &amp; Methanol</td>
<td>1</td>
<td>$100.00</td>
<td>$100.00</td>
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<td><strong>Marketing</strong></td>
<td>16</td>
<td>Banner</td>
<td>1</td>
<td>$100.00</td>
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<tr>
<td></td>
<td>17</td>
<td>Tablecloth</td>
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<tr>
<td></td>
<td>18</td>
<td>Business Cards</td>
<td>8</td>
<td>$30.00</td>
<td>$240.00</td>
</tr>
<tr>
<td></td>
<td>19</td>
<td>T-Shirts/Polos</td>
<td>10</td>
<td>$15.00</td>
<td>$150.00</td>
</tr>
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<td></td>
<td>20</td>
<td>Flyers</td>
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</tr>
<tr>
<td></td>
<td>21</td>
<td>Posters</td>
<td>100</td>
<td>$1.00</td>
<td>$100.00</td>
</tr>
<tr>
<td><strong>Conferences</strong></td>
<td>22</td>
<td>MRS Spring Meeting</td>
<td>3</td>
<td></td>
<td>$1,095.79</td>
</tr>
<tr>
<td></td>
<td>23</td>
<td>Congressional Visits Day (CVD)</td>
<td>3</td>
<td></td>
<td>$1,461.05</td>
</tr>
<tr>
<td></td>
<td>24</td>
<td>SPIE Optics &amp; Photonics</td>
<td>2</td>
<td></td>
<td>$730.52</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>$5,371.34</td>
</tr>
</tbody>
</table>
Part 4

Events

Of our events, we have hosted academic-specialized, outreach initiatives, and social events. Additionally, Étendue members have had a presence at various optics-related conferences.

4.1 Academic Support

We have supported workshops for the following:

Software:

- Mathworks: MATLAB (Fig.4.2-4.3)
- Wolfram Research: Mathematica
- National Instruments: LabVIEW
- ZEMAX: OpticStudio
- Autodesk: AutoCAD, Inventor & Simulation

Miscellaneous:

- Grant/Proposal Writing
- Raman Spectroscopy & Microscopy Instrumentation (Fig.4.1)
- Career Workshops (i.e. Resume/CV Styling, LaTeX, etc.)
Figure 4.1: Collage of Instrumentation workshops as provided by the SPIE Student Chapter
4.2 CONFERENCES

Conference travel for the years that Étendue was in operation included: SPIE Optics + Photonics, the Materials Research Society, and Congressional Visits Day (Fig.4.4)

4.3 OUTREACH

Outreach contacts span:

- STEM RSO Fairs & Leadership Forums
- Undergraduate Research Symposia
- UNLV Light-the-Night Walk Engineering/Science Seminars
- Prep-a-Palooza Career Workshops
• Las Vegas Science & Technology Fair

We were additionally able to feature Dr. Marc Himel as part of our SPIE Visiting Lecture benefit. (Fig.4.5-4.6)

4.4 **SOCIAL EVENTS**

We have hosted private study groups and a laser tag fundraiser to support camaraderie and fraternity among SPIE student optics chapter members.
Figure 4.4: Collage of 2016-2017 Étendue presidency Dale E. Karas and Russell Pinnegar at Congressional Visits Day 2017
Figure 4.5: Dr. Marc Himel presenting his talk, *Harnessing Light for a Better World*
Figure 4.6: Dr. Mark Himel with the 2016-2017 Presidency of Étendue
Part 5

Summary of Optics Course Listings

Pursuant to SPIE’s chapter formation process for Étendue: UNLV Student Optics Chapter, we provide the following tables (Table.5.1-5.2) indicating optics-related catalog offerings at the University of Nevada, Las Vegas (UNLV).

Many departments and researchers at UNLV utilize optical theory and applied technology for education and advanced research. However, UNLV does not have a dedicated optics department. It is the aim of Étendue promote the research and enjoyment optics at UNLV.

UNLV is accredited by the Northwest Commission on Colleges and Universities. Furthermore, the Civil, Computer, Electrical, and Mechanical Engineering programs at UNLV are ABET accredited. More information on UNLV’s accreditation status can be found at: http://provost.unlv.edu/vpaa/accreditation.html

UNLV offers the following optics research focused courses. Full course descriptions can be found by searching the UNLV catalog at: http://catalog.unlv.edu/index.php.
### Table 5.1: Summary of Undergraduate Course Offerings

<table>
<thead>
<tr>
<th>Department</th>
<th>Number</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrical and Computer Engineering</td>
<td>CPE 400</td>
<td>Computer Communications Networks</td>
</tr>
<tr>
<td></td>
<td>(ECG 600)</td>
<td></td>
</tr>
<tr>
<td>Electrical and Computer Engineering</td>
<td>EE 431</td>
<td>Engineering Optics</td>
</tr>
<tr>
<td></td>
<td>(ECG 631)</td>
<td></td>
</tr>
<tr>
<td>Electrical and Computer Engineering</td>
<td>EE 452</td>
<td>Optical Electronics</td>
</tr>
<tr>
<td></td>
<td>(EE 652)</td>
<td></td>
</tr>
<tr>
<td>Electrical and Computer Engineering</td>
<td>(Various)</td>
<td>Various Signals and Systems courses</td>
</tr>
<tr>
<td>Geology</td>
<td>GEOL 221</td>
<td>Intro to Optical Mineralogy and Petrography</td>
</tr>
<tr>
<td>Physics</td>
<td>PHYS 182</td>
<td>Physics for Scientists and Engineers III</td>
</tr>
<tr>
<td>Physics</td>
<td>PHYS 182L</td>
<td>Physics for Scientists and Engineers III Lab</td>
</tr>
<tr>
<td>Physics</td>
<td>PHYS 461</td>
<td>Light and Physical Optics</td>
</tr>
<tr>
<td></td>
<td>(PHYS 661)</td>
<td></td>
</tr>
<tr>
<td>Physics</td>
<td>PHYS 462</td>
<td>Modern Optics and Photonics</td>
</tr>
<tr>
<td></td>
<td>(PHYS 662)</td>
<td></td>
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### Table 5.2: Summary of Graduate Course Offerings

<table>
<thead>
<tr>
<th>Department</th>
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<tr>
<td>Electrical and Computer Engineering</td>
<td>ECG 750</td>
<td>Photonics</td>
</tr>
<tr>
<td>Electrical and Computer Engineering</td>
<td>ECG 758R</td>
<td>Optical Sensing (Special Topics Course)</td>
</tr>
<tr>
<td>Electrical and Computer Engineering</td>
<td>ECG 793</td>
<td>Engineering Science Seminar</td>
</tr>
<tr>
<td>Math</td>
<td>MAT 741</td>
<td>Mathematical Wave Propagation Theory and Applications II</td>
</tr>
<tr>
<td>Physics</td>
<td>PHYS 705</td>
<td>Advanced Optical Systems</td>
</tr>
<tr>
<td>Physics</td>
<td>PHYS 732</td>
<td>Quantum Optics</td>
</tr>
</tbody>
</table>
Appendix A

Supplemental Files

The constitution and bylaws to our SPIE student chapter is provided in the final appendix.
CONSTITUTION

ARTICLE 1. NAME

1.1. This organization shall be known as \textit{Etendue: The UNLV Student Optics Chapter}, hereinafter called the Chapter. The Chapter recognizes parent organizations SPIE (The International Society of Optics and Photonics) and OSA (The Optical Society) for optics chapter affiliation, and The University of Nevada, Las Vegas (UNLV) for its academic affiliation.

ARTICLE 2. PURPOSE

2.1. The purpose of the Chapter shall be to promote the discipline of Optical Science and Engineering through:

2.1.1. the participation of group members in study, research, and discussion;

2.1.2. the dissemination of knowledge of the field of Optical Engineering among the student and local communities;

2.1.3. the furthering the professional and academic development of its members;

2.1.4. the interaction with members and other student chapters of the Chapter’s parent organizations, namely, SPIE and OSA, with a focus on information sharing and networking;

2.1.5. and to raise awareness of post-graduation opportunities for students.

2.2. The Chapter shall promote membership in SPIE and OSA by acquainting the student body with the ideas, purposes, and objectives of SPIE and OSA.

2.3. The organization and operation of the Chapter shall be in accordance with the Constitution and Bylaws of SPIE and OSA.

ARTICLE 3. MEMBERSHIP

3.1. Membership shall be limited to undergraduate students, graduate students, and interested faculty/staff members of The University of Nevada, Las Vegas (UNLV).

3.1.1. Interested faculty/staff members of UNLV are also encouraged to participate as individual SPIE/OSA members.

3.2. Membership shall consist of a minimum of ten (10) student members of SPIE and five (5) student members of OSA. An individual member may represent both organizations.

3.3. There shall be no membership discrimination on the basis of race, color, sex, gender identity, sexual orientation, marital status, religion, national origin, or age.

3.3.1. All policies concerning participant and member conduct are required to follow and agree to the UNLV Code of Student Conduct, as well as any and all
requirements for a UNLV Registered Student Organization (RSO) to maintain authorized standing.

3.4. Some Chapter activities may require United States Citizenship. These activities include, but are not limited to, service, social activities, field trips, research initiatives, and certain activities that are included in the realm of Security Science & Engineering, Nuclear Engineering, and Defense-related topics at UNLV.

3.4.1. The citizenship requirement of some Chapter activities shall not prohibit non-U.S. citizens from joining the student chapter. All interested students, faculty, and staff are encouraged to participate as much as possible.

3.5. A member shall be considered active if they have attended at least one of the last three scheduled meetings.

ARTICLE 4. STUDENT ASSOCIATION

4.1. The Chapter shall be recognized by and subject to the regulations of UNLV’s Student Association as an official on-campus organization. Registration requirements must be kept up-to-date, with valid credentials when needed by the Chapter’s parent organizations.

ARTICLE 5. OFFICERS

5.1. The Officers of the Chapter shall be, at a minimum, President, Vice President, Secretary, Treasurer, and Communications Officer.

5.1.1. The duties of the above officers is defined in Article 1 of the Chapter’s Bylaws.

5.2. Additional offers, if necessary, will be prescribed in Article 1 of the Chapter’s Bylaws.

5.3. To be eligible for Office, a candidate must be a student member, in good standing, of SPIE and OSA. Further eligibility requirements are defined in Article 1 of the Chapter’s Bylaws.

5.4. The Officers shall be elected in the manner prescribed by Article 3 of the Chapter’s Bylaws.

5.5. Officers shall hold office for a period not to exceed of one (1) Chapter year.

5.6. When necessary, current officers may, of their own volition, forfeit their duties. The remaining Chapter officers are required to seek immediate replacement for the elected position.

ARTICLE 6. RECONCILIATION

6.1. The Chapter is to be bound by all applicable rules, regulations, and guidelines set forth by UNLV, SPIE, and OSA.

6.2. In the event of a conflict between the guidelines from these organizations the most conservative interpretation is to be used.
ARTICLE 7. CONSTITUTION

7.1. This Constitution may be amended by a two-thirds vote of the Chapter membership provided the amendments were proposed at least one meeting prior to the time of voting. Major constitutional revisions must be performed at an in person meeting.

7.1.1. Upon passage, an amendment becomes effective only after it is approved by both SPIE and OSA.

7.2. Under no circumstance shall this constitution violate policies or guidelines of UNLV, SPIE, and OSA.

ARTICLE 8. RATIFICATION

8.1. The ratification, by the Chapter’s initial officers, of the Chapter Constitution shall be sufficient for the establishment of such.

____________________________________
Dale E. Karas, President
Date

____________________________________
Russell Pinnegar, Vice-President
Date

____________________________________
Samuel Tam, Secretary
Date

____________________________________
Cilla Jose, Treasurer
Date

____________________________________
Sarah Thornton, Communications Officer
Date

____________________________________
Ke-Xun Sun, Chapter Co-Advisor
Date

____________________________________
Jaeyun Moon, Chapter Co-Advisor
Date
BYLAWS

ARTICLE 1. OFFICERS

1.1. The Chapter executives shall consist of the following officers. With Article 1.1.1 through 1.1.6 constituting the minimum set of officers required for the proper functioning of the Chapter.

1.1.1. President

1.1.1.1. The President, as Chief Executive of the Chapter, shall supervise the Chapter’s affairs and activities.

1.1.1.2. The President is the executive, administrative, presiding and reporting officer.

1.1.1.3. The President shall be the public face of the Chapter.

1.1.1.4. All executive duties not otherwise delegated are assumed by the President.

1.1.2. Vice-President

1.1.2.1. The Vice-President is an extension and assistant to the President.

1.1.2.2. The primary role of the Vice-President is the programming and execution of Chapter activities.

1.1.2.3. In the absence of the President, the Vice President shall preside at meetings and perform all other functions of the President.

1.1.3. Secretary

1.1.3.1. The Secretary shall keep a permanent record of all meetings and activities of the Chapter.

1.1.3.2. The Secretary shall be responsible for furnishing meeting summaries to the membership within two days of the conclusion of the meeting.

1.1.3.3. The Secretary shall be responsible for maintaining a current roster of members and for timely communications with SPIE and OSA Headquarters.

1.1.3.4. The Secretary shall be responsible for preparing the Annual Report pursuant to Article 10.

1.1.4. Treasurer

1.1.4.1. The Treasurer shall be responsible for the financial records of the organization.
1.1.4.2. The Treasurer shall facilitate the disbursement of funds at the direction of the membership (by vote) and with the approval of the Faculty Advisor.

1.1.4.3. The Treasurer shall report all financial transactions in detail when requested by the membership.

1.1.4.4. The Treasurer shall comply with all reporting requirements of Article 10.

1.1.4.5. The Treasurer shall assure all income received through Chapter dues and income-producing functions is approved by the membership, Faculty Advisor, and the Executive Director of SPIE acting under the direction of the Society’s Treasurer.

1.1.4.6. The chapter treasurer shall act in compliance with UNLV-mandated funding requirements, officiate the chapter’s financial status, accounts, and other such information. The Treasurer must account for the UNLV tax information concerning student organizations, and is encouraged to solicit for non-profit, tax-exempt status, and maintain all such requirements for the chapter.

1.1.5. Communications Officer

1.1.5.1. The Communications Officer, under the direction of the President shall be responsible for public relations, publicity and promotion of the Chapter’s activities.

1.1.5.2. The Communications Officer shall be responsible for directing or maintaining any online and social media presence of the Chapter.

1.1.6. Faculty Advisor

1.1.6.1. See Article 9

1.2. Officer duties may be adjusted through consensus as necessary during recesses of the academic term.

ARTICLE 2. NOMINATIONS AND MOTIONS

2.1. Any active Chapter member may propose nominations for an activity or elections.

2.2. All motions and nominations shall be seconded by an active member.

2.3. Any resolved action shall be sustained through a simple majority vote of members present unless provided for elsewhere in this document.

2.4. All motions, resolutions, and speeches, with the exception of activities related to officer elections, shall take place during a normally scheduled meeting.
2.5. Activities related to the election of officers (i.e. nomination of officers, nomination speeches, elections, and officer installation) shall take place during a specially scheduled election meeting.

2.5.1. A special meeting for the nomination, and voting of offers shall be called at least once per Chapter year.

ARTICLE 3. ELECTIONS

3.1. Election of officers for the following Chapter year shall be held no later than the last meeting of each Chapter year.

3.2. The term of office shall be one (1) Chapter year.

3.2.1. Terms may only be exceeded only if deemed appropriate by unanimous decision of all active chapter members.

3.3. Special elections shall be called to elect new officers to fill any vacancies which may occur.

3.3.1. Special elections shall occur if written notice of the meeting, its purpose, and the office to be filled has been posted in a public place frequented by the Chapter at least ten (10) days prior to the date of such election.

3.3.2. An officer elected by special election shall take office immediately and serve the remainder of the term.

3.4. No member shall be elected to office if the start of their Term contains their expected graduation date within the same academic semester.

3.5. A two-thirds (⅔) majority vote of all active members present at the election meeting shall be necessary to elect an officer.

3.5.1. Active members unable to attend an election meeting may vote remotely through their rebelmail account by emailing their voting preferences to all members of the current Executive Committee by noon on the calendar day following the election meeting.

3.5.1.1. Members submitting remote ballots shall waive their right to a secret ballot.

3.5.1.2. Members present during an election meeting may not submit a remote ballot.

3.6. All elections shall be by secret ballot.

3.6.1. Ballots shall be counted at noon on the calendar day following the election meeting by a majority of the outgoing officers and supervised by the Faculty Advisor. The newly elected officers shall hold the position of officer elect until the start of their term.
ARTICLE 4. MEETINGS

4.1. The Chapter shall hold at least three meetings during an academic semester, with the exact date determined by consensus of the officers.

4.1.1. A field trip may be scheduled in lieu of a general monthly meeting; however, social functions may not be scheduled in lieu of a general meeting.

4.2. Social functions are meetings in which no motions or resolutions are permitted.

4.3. Notice of all general meetings shall be announced in writing through appropriate means at least five (5) days prior to the date of the meeting, and may be further publicized in any manner deemed necessary and proper.

4.3.1. When possible, an agenda will be provided with the meeting announcement.

4.4. The maintenance of quorum requires the following:

4.4.1. The minimum members required for a general meeting shall be the majority of the members of the Executive Committee and at least one additional active member.

4.5. Activity requiring voting, unless otherwise provided for in this document, will be sustained through a simple majority of members present.

4.6. Emergency meetings may be conducted without the regular five (5) day notice, if all of the following conditions are met:

4.6.1. All current Chapter members are notified of the meeting’s time, location, agenda, and necessity.

4.6.2. Any activity requiring voting must pass with a two-thirds (%) majority vote of members present. Remote voting is permissible by live telephone or text conversation witnessed by the members present.

4.6.3. Any activity, resolution, or action taken as the result of an emergency meeting may objected to by any active member of the Chapter, and the activity, resolution, or action taken may be nullified if disputed by larger than one-fourth (%) of the active Chapter membership.

4.7. No meeting shall allow any activities which are illegal, potentially dangerous, or prohibited UNLV’s Code of Student Conduct.

4.8. All meetings conducted outside of the regular academic term (i.e. Summer) shall be optional, and members shall not be penalized for failing to attend.

4.8.1. Any activity requiring voting must pass with a two-thirds (%) majority vote of members present. Remote voting is permissible by live telephone or text conversation witnessed by the members present.
4.8.2. Any actions undertaken outside of the regular academic term shall be put to a sustaining vote during the first general meeting of the following term.

ARTICLE 5. DUES
5.1. SPIE and OSA shall set the regular annual membership fee for their respective members.

5.1.1. SPIE and OSA membership fees shall be paid directly to their respective organizations.

5.2. The Chapter President, under direction of the treasurer may institute a voluntary membership contribution. The contribution shall be paid directly to the Chapter treasury for use by the Chapter. Both SPIE and OSA shall be notified of the amount and purpose of any collected Chapter dues.

5.3. Paid student or alternative individual membership to either SPIE or OSA is not a requirement for joining the Chapter, participating in Chapter activities, and being considered an active member.

ARTICLE 6. CHAPTER YEAR
6.1. The Chapter year shall begin with the first day of UNLV’s Fall semester and end with the day preceding the start of the Fall semester.

ARTICLE 7. PROGRAMS
7.1. All Chapter Programming shall be in support of Article 2 of the Chapter’s constitution.

7.2. Programming for general meetings shall be primarily devoted to the discipline of Optical Science and Engineering and may be accomplished in connection with a dinner, refreshments, or another faculty-approved student event.

7.2.1. Social functions shall not constitute a general meeting.

ARTICLE 8. COMMITTEES
8.1. The Officers and the Faculty Advisor shall make up the Executive Committee.

8.2. The Executive Committee shall appoint additional committees as necessary to further the goals and operations of the Chapter.

8.3. Committees shall consist of two (2) to five (5) members of the Chapter.

8.4. The President shall appoint all Committee Chairs.

8.5. Committee members shall be appointed by consensus of the President and the respective Committee Chairperson.

ARTICLE 9. FACULTY ADVISOR(S)
9.1. The chapter Advisor shall be a member of the UNLV faculty, a current member of SPIE and OSA, and have the written endorsement of their Department Head.
9.1.1. In the event of cooperative advisorship between/among faculty members, the advisors must maintain current membership in SPIE and/or OSA such that the necessary membership affiliations are maintained.

9.2. The Faculty Advisor shall serve the Chapter and SPIE/OSA as an intermediary and resource person.

ARTICLE 10. ANNUAL REPORT

10.1. The Chapter shall furnish an Annual Report to SPIE and OSA Headquarters once per year on their appointed due date. Reports shall include a Financial Statement and Activity Summary for the period.

10.2. The Annual Report shall constitute the following contributions:

10.2.1. President: An overview and summary of the Chapter mission, with detail into the research initiatives being performed at The University of Nevada, Las Vegas (UNLV) relevant to the Chapter

10.2.2. Vice President: A summary of activities during the Chapter year, and a statement of activity planned for the following Chapter year

10.2.3. Secretary: A summary of meetings held with attendance; final preparation of the Annual report

10.2.4. Treasurer: Financial accounting of all Chapter activities/dealings for the Chapter year

10.2.5. Communications Officer: Listing and descriptions of all events held during the Chapter year

10.2.6. Faculty Advisor: Authorization and any additional, necessary contributions

10.3. The Annual Report must include next year’s Chapter Activity Plan.

10.4. The Annual Report shall be presented to the membership by the Secretary for approval by the Membership at the general meeting prior to the report’s due date.

ARTICLE 11. CHAPTER PROBATIONARY STATUS AND REVOCATION

11.1. The Chapter shall maintain a minimum of ten (10) SPIE student members, five (5) OSA student members, and hold at least three (3) meetings per year to retain SPIE and OSA Student Chapter status.

11.2. Should the Chapter fail to comply with its reporting or membership requirements (Article 10 and Article 11.1), the Chapter shall be placed on probationary status for one year.

11.3. If the Chapter fails to rectify the situation for which it was given probationary status or fails to comply with Article 11.1 in any other way during its probationary period, its Charter will be revoked by action of the SPIE and/or OSA Board of Directors.
11.4. Furthermore, the Chapter’s Charter may be revoked if its continuance is considered by the appropriate representatives of SPIE, OSA, or UNLV to not be in the best interest of their respective organization.

ARTICLE 12. AMENDMENT
12.1. These Bylaws may be amended by a two-thirds (2/3) vote of the Chapter membership provided the amendments were proposed at least one meeting prior to the time of voting.

12.1.1. Upon passage, an amendment becomes effective as soon as it is approved by SPIE and OSA Headquarters.

ARTICLE 13. AUTHORITY AND FINANCIAL OBLIGATION
13.1. The Chapter shall not have authority to act for or in the name of the SPIE, OSA, or UNLV and shall not incur any financial obligations whatsoever in the name of the above organizations.

13.2. The Chapter agrees that OSA, SPIE, and UNLV shall not be held responsible, directly or indirectly, for any claims or damages arising out of the Chapter’s actions in satisfying the provisions of this agreement unless specifically agreed upon in advance by the appropriate executive representatives of SPIE, OSA, and UNLV.

ARTICLE 14. RECONCILIATION
14.1. The Chapter is to be bound by all applicable rules, regulations, and guidelines set forth by UNLV, SPIE, and OSA.

14.2. In the event of a conflict between the guidelines from these organizations the most conservative interpretation is to be used.

ARTICLE 15. RATIFICATION
15.1. The ratification, by the Chapter’s initial officers, of the Chapter Bylaws shall be sufficient for the establishment of the student Chapter entity.

____________________________________  ______________
Dale E. Karas, President                  Date

____________________________________  ______________
Russell Pinnegar, Vice-President          Date

____________________________________  ______________
Samuel Tam, Secretary                    Date

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Additionally, per the establishment of a Student Optics Chapter at UNLV with parent organizations of SPIE/OSA, the Chapter recognizes participation by the additional founding members, serving witness and agreement to the bylaws of this constitution:

Robert Buckles, Member

Matt Burbaum, Member

Cirena Torres, Member

Hector Valencia, Member

Mario Valles, Member

Kirk Vrigian, Member