

## SEMI 201

### Education

Master's of Science in Applied Physics  
*University of Oregon*

June 2017-September 2018 (expected)  
Eugene, OR

Bachelor of Science in Applied Physics  
*University of Oregon*  
Overall GPA: 3.67 Major GPA: 3.69

September 2013-June 2017  
Eugene, OR

### Experience

#### **Alemán Research Group in Experimental Quantum and Nano-scale Physics**

Undergraduate Laboratory Assistant  
*University of Oregon Physics Department*

September 2015-June 2017  
Eugene, OR

#### Independent Project:

- Designed microfluidic circuits using CAD and created prototypes before transitioning to making molds out of SU-8 using optical lithography and devices out of polydimethylsiloxane (PDMS)
- Characterized previously unrealized mechanical resonance in microfluidic circuits with high Q factor and quick response time using an acousto-mechanical driving mechanism and optical detection methods
- Optimized data collection by writing LabVIEW code to interface with a DAQ and lock-in amplifier, as well as making component and efficiency improvements to the optical detection using knowledge of free-space optics

#### Side Projects:

- Created design for a microfluidic water heater using CAD and co-manufactured prototype
- Assisted in CNT growth and QA assurance of the growth by using SEM
- Drafted and prototyped a vacuum-compatible modification for an optical breadboard for use in an Atomic Force Microscope using CAD and a CO<sub>2</sub> laser cutter

Presented ~10 technical talks on own work and analysis of relevant research papers to group

### Advanced Course Projects

#### -Acoustical light generation from liquids (sonoluminescence)

- Constructed experiment to study the phenomenon of acoustically generated light from a trapped bubble in liquid
- Iterated through voltage and frequency to find the stability conditions for our experiment, which we eventually found, allowing us to hold a bubble stable for over a minute
- Laid groundwork to allow future groups to change other parameters such as liquid type in order to alter the output wavelength

#### -Big Data Programming

- Used Python (pandas/NumPy) to solve problems relevant to big data such as applying filters to noisy data to find the underlying trends and optimization in the travelling salesman problem

#### Advanced Optics Lab

- Set up and analyzed the characteristics of a Fabry-Perot cavity
- Studied the effects of acousto-optical modulation (AOM) on the propagation of light

**Private Academic Tutor**

September 2013-June 2017  
Eugene, OR

- Tutored 3-4 students a term in 100 and 200-level mathematics courses 1-2 times a week each
- Used communication skills to effectively convey calculus concepts and promote understanding of material

**Grader**

June 2016-June 2017  
Eugene, OR

*University of Oregon Math Department*

- Self-taught material in order to grade low-level math classes with unique material
- Accurately and timely graded math homework, typically up to 8 hours per week

**Activities**

*Delta Upsilon Fraternity*

January 2014-June 2017

- Founding Father: Helped grow the chapter to approximately 50 members through recruitment and events
- 2015 Vice President of Academic Excellence: Implemented and ran study tables twice a week in addition to working individually with members who were not meeting academic expectations

*Reading to Disadvantaged Children*

June 2016-June 2017

- Delta Upsilon Fraternity, Volunteer
- Read with 1-2 children weekly in lower-income neighborhoods to help develop their reading skills

**Additional Experience**

Programming: Python (large data sets, using pandas/NumPy)

Languages: Dutch, conversational French

International Experience: Lived in Belgium for 3 years, traveled throughout Europe

Supplemental Classes: Big Data Analysis (Python), Analog and Digital Electronics, Classical and Modern Optics