Alex Benjamin
20 South 36th Street
Philadelphia, PA 19104
267-818-0310
arb93@drexel.edu

Education

Drexel University — Philadelphia,PA
Bachelor and Master of Science in Mechanical Engineering — Anticipated Graduation: June, 2015
Minor in Mathematics — **Cumulative GPA: 3.98**

Honors and Awards

A.J. Drexel Scholarship, Drexel University (2010-2015)
Drexel University's Honor Roll, Drexel University (2010-Present)
Chemistry Excellence Award, American Chemical Society (2010)
Drexel University's Dean's List, Drexel University (2010- Present)
Joe Martin Scholarship (2012)
Mathematics Excellence Award, AMC (2010)

Relevant Coursework

Fundamentals of CAD Design
Basic Fluid Mechanics
Thermodynamic Analysis I
Engineering Mechanics - Statics
Heat Transfer
Mechanics of Materials I
Engineering Mechanics - Dynamics
Fluid Dynamics I
Applied Engineering Analytical Methods I

Engineering Design Project

Drexel University — Philadelphia, PA
Cannula for Microtissue Hydrodissection — March 2011- June 2011

- Researched novel cannula designs for dissecting a delicate membrane of the human lens capsule from the underlying nuclear material.
- Developed three-dimensional CAD models of the optimized/original cannula configurations.
- Modeled, analyzed, and compared fluid-flow through the optimized and original cannula designs using advanced fluid-flow simulators.
- Designed and tested an optimized prototype for evaluation in surgery.

Work Experience

Merck and Co. — West Point, PA
Pharmaceutical Packaging Technology and Development Engineer — September 2011 - April 2012

- Executed planned activities to evaluate the stability and marketing sustainability of new products in both solid and liquid dosage forms.
- Determined and analyzed moisture absorption isotherms of various drug products and developed and executed tests to characterize and quantify the rate of moisture permeation through potential packaging configurations.
- Utilized mathematical models, based on systems of differential equations, in conjunction with the principles of mass-balance to simulate the behavior of pharmaceutical products in packaging configurations.

Drexel University's Math Department — Philadelphia,PA
Linear Algebra and Applied Mathematics for Engineers — June 2012 - Present

- Worked with a team of ten students and a professor to write a creative, original, and intuitive textbook for engineers and applied scientists.
- Fused the core concepts of linear algebra with those of practical and advanced topics such as finite element methods, tensor analysis, Laplace's equation etc.
- Integrated practical and real-world examples and practice problems with simple yet detailed explanations to help the reader understand the fundamental concepts of each chapter.

Drexel University's Math Department — Philadelphia, PA
Independent Researcher — June 2011-Present

- Developed and implemented a unique 2D and 3D mesh management package in MATLAB based on the principles of discrete differential geometry.
- Created and tested functions for mesh refinement, manipulation, and modification with boundary management and extraction.
- Configured and optimized functions for the computation of differential fields, mesh relaxations, and rigid transformations of meshes.
- Applied the principles of meshing and discrete differential geometry to study dynamic and static problems in engineering, specifically those relating to fluid films.

Drexel University's Quantum Device Laboratory — Philadelphia, PA
Mechanical Engineer — June 2011 - August 2011

- Analyzed and designed ultra-low-temperature and low-noise dip testers, operational amplifiers, and waveform generators to test macroscopic, graphene and MgB2-based qubits.
- Configured and optimized the electromechanical components of the lab including dilution refrigerators and data acquisition systems to resolve the quantum mechanical behavior of superconducting Josephon Junctions.

Skills

Microsoft Windows (2000-7), Mac OS, Microsoft Office (Word, Excel,PowerPoint, and Outlook), Maple, AutoCAD, CreoElements/Pro, Adobe Illustrator, AccuCADD, Pro/DESKTOP, MATLAB, SolidWorks, LabVIEW.
Foreign Languages: Hindi and Marathi

Activities

American Society of Mechanical Engineers (2010-Present), American Chemical Society (2010-Present), Society of Physics Students (2010-Present), Honors Student Advisory Committee (2010-Present), National Forensic League (2009-Present).