

# ANDREW SIFFERLEN

Senior Biomedical Engineering Major

Portfolio



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## OBJECTIVE

Continue to gain real world experience and make a difference in the medical field by creating value to others through engineering.

## EDUCATION

**Worcester Polytechnic Institute**, Worcester, MA

Bachelor's Degree of Science in Biomedical Engineering, Business Minor, GPA 4.0/4.0

May 2023

**Lincoln-Sudbury Regional High School**, Sudbury, MA

High School Diploma, LS Scholar (All Semesters), GPA 3.88/4.0; Cum Laude

June 2019

**Related Courses:** Biomaterials Lab, Cellular Engineering Lab, Tissue Interactions, Drug Delivery, Physiology and Engineering, Transport Analysis in Bioengineering, Biomedical Data Analysis, Cell and Molecular Bioengineering, Biomedical Imaging, Cell Biology, Solid Biomechanics Lab Techniques, Skeletal Biomechanics Lab, Materials Processing, Leadership Practice

## SKILLS

Programs: MATLAB, ImageJ, Bluehill, Python, ZEN, Minitab, Solidworks, XML, LabVIEW, CellProfiler, CES Edupack, Multisim, Maple, html, Microsoft Word, Excel, PowerPoint

Laboratory: Aseptic Mammalian Cell Culture, PCR, Wet lab (centrifuge, spectrophotometry), animal surgery, Analytical concepts (calibration curves, dilutions), analytical skills (micro pipetting, balances), pH buffering, mechanical characterization of 3pt bending and tensile, Force plate, Polhemus

## EXPERIENCE

**Systems Integration Engineering Co-op**, Lexagene, Beverly, MA

June – December 2022

- Designing, executing, and analyzing data from system and subsystem level experimentation related to complex IVD devices.
- Experiments including component reliability, material compatibility, alternative device process studies.
- Supporting the integration of biologics and instrumentation as a member of the Product Development team.
- Maintaining multiple ongoing projects in a fast-paced start up environment.
- Consulting and validating manufacturing upscale, handling lab maintenance, and assisting in DHR procedures.

## PROJECTS

**Validating and Manufacturing a Bio-realistic Surgical Phantom for Laparoscopic Surgical Training**, WPI

September 2022 – Present

- Collaborating on a team of four to enhance a bio-realistic section of the abdomen that fits inside existing laparoscopic and robotic surgical trainers.
- Observing laparoscopic surgeries and working with clinical clients to evaluate the strengths and limitations of current models.
- Developing bio-realistic components that are easily repaired, replaced, and reused.
- Assessing and creating a scalable prototype that can be deployed as a commercial product.

**Cellular Engineering Lab**, WPI

January - March 2022

- Passaged, froze, thawed, and stained mammalian 3T3 cells through aseptic technique cell culture.
- Evaluated coating and adhesion materials biocompatibility and effects on cell proliferation on PDMS surface.
- Observed effects of differing Fetal Bovine Serum percentages in complete medium on cell proliferation.

**Establishing IQP Partner Relationships in Prague**, Prague Czech Republic

October - December 2021

- Expanded opportunities available to students for the Prague Project Center.
- Conducted interviews with center directors and intermediary contacts.
- Produced and delivered a sales pitch PowerPoint Presentation to organization representatives.

**Biomaterials Lab**, WPI

August - October 2021

- Extruded Fibrin Microthreads through a syringe pump, capture microscopic pictures with ZEN, and measure diameters from a reference hemacytometer with ImageJ.
- Produced self-assembled DCPC lipid microtubules, load with BSA protein, analyze degradation and protein release as a drug delivery system.
- Measured absorbance of BCA assay with spectrophotometer and calculate concentration from serial dilution standard curve.

## COMMUNITY INVOLVEMENT

Varsity Track and Field: Captain (September 2022 – Present)

August 2019-Present

Food Recovery Network Community Service Volunteer

Phi Kappa Theta: Vice President of Membership (November 2021 – December 2022)

September 2020-Present

Membership Development Chair (November 2020 – December 2021)

## HONORS & ACHIEVEMENTS

Dean's List all semesters

Alpha Eta Mu Beta Biomedical Engineering and Tau Beta Pi Engineering Honor Societies

All Academic National Athlete (2020) Heptathlon, All Region Honors (2022) Decathlon