

Thomas Marshall

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Education

Northeastern University, Boston, MA

Graduated May 2022

Bachelor of Science in Mechanical Engineering, Minor in International Affairs

- Coursework: Capstone, Fluids Mechanics, Heat Transfer, Thermodynamics, Finite Element Analysis, Mechanical Design, Material Science, Dynamics, Mechanics of Materials, Probability and Statistics, Circuits
- Leadership: Northeastern Cycling Captain, FRC Robotics Mentor

American College of Thessaloniki, Thessaloniki, Greece

Skills

- **Computer Applications:** SolidWorks, Fusion360, AutoCAD, Microsoft Suite, Python
- **Design for Manufacturing:** CNC, Injection Molding, Hot Embossing, Sheet Metal, Water Jet
- **Rapid Prototyping:** MJF, SLA, and FDM styles of 3D printing, laser cutting, shop tools, hand tools

Work Experience

Xellar Biosystems | Sr. Mechanical Engineer

August 2024 - Current

- Lead the manufacturing process development of a novel microfluidic OOC device, delivered 1500+ devices.
- Automated multiple liquid handling workflows, including a hydrogel loading process into microfluidic channels.
- Collaborated among a small team of 3 engineers to bring 2 products through all stages of NPD.
- Designed and prototyped a rocking perfusion system which allowed for more custom and accurate control.

Xellar Biosystems | Mechanical Engineer

September 2022 - August 2024

- Developed a novel surface functionalization method to allow capillary pinning of hydrogel in microfluidics.
- Authored protocols for collaborators to maintain GLP, increasing user success and reducing ramp-up time.
- Collaborated with beta users to identify user needs and resolve bio-process challenges, driving product optimization.
- Facilitated tech-transfer to an overseas manufacturer, provided workflows to ensure a smooth transition.

Portal Instruments | Mechanical Design Co-op

July - December 2020 and July - December 2021

- Developed an occurrence rate test to study a micro-injection molding issue, used data to update processing procedure.
- Created PQ, IQ, and OQ documentation for new fixtures being installed on the manufacturing line.
- Designed custom 3D printed molds to quickly prototype a new elastomeric part in-house.
- Designed and built a high viscosity fluid-filling fixture for cartridges with medical applications.
- Adapted a design for a shock and vibration fixture to comply with constraints, increasing testing efficiency.
- Inspected and analyzed cartridges for defects and design flaws for both storage and use cases.

Solchroma Technology | Mechanical Engineering Co-op

July - December 2019

- Designed an adjustable alignment jig with accuracy up to 2.5 microns to assist with robotic glass placement.
- Created a leak detection system for a multi-chambered device to validate production processes.
- Formulated and executed a design of experiments using peel testing to optimize bonding processes.
- Analyzed data from peel testing to make recommendations for material and adhesive selection.

Capstone / Personal Projects

EFormula Dynamometer

January - May 2022

- Completed steel frame design and manufacturing for a chassis dynamometer.
- Designed an auxiliary roller to increase safety and stability, while keeping cost and size down.
- Repurposed large steel rollers from unused equipment, reducing project costs and material waste.

Co-Founded a FIRST Robotics Team

September 2016

- Founded an FRC robotics team to bring additional STEM learning opportunities to the school.
- Received the Rookie All-Star Award, qualified and went to the World Championships

