Rachel Barnes

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May-December 2025 Co-Op Availability

EDUCATION

Northeastern University   Boston, MA
Candidate for Bachelor of Science in Mechanical Engineering and a Minor in Mathematics   *May 2026*
Awards and Activities: ASME (CSWA Course Instructor), Phi Sigma Rho (Engineering Sorority),   GPA **3.83**
Pi Tau Sigma (Mechanical Engineering Honors Society), Connection Scholarship, Dean's List
Relevant Courses: Introduction to Material Science, Probability and Statistics, Electrical Engineering,
CAD and Manufacturing, Statics, Thermodynamics, Mechanics of Materials, Statistic and Stochastic Processes

SKILLS

Application: SolidWorks (FEA Simulation, CSWP), Fusion 360, Microsoft Excel, AutoCad, Adobe Suite
Programming: C++, MATLAB, Arduino
Fabrication/Testing: FDM 3D Printing, Laser Cutting, Soldering, Instron Tensile Test, Optical Microscopy

EXPERIENCE

Applied Plastics (Medical Equipment Manufacturing)   Norwood, MA
Application Engineer Co-op   *July 2024 - Dec 2024*
- Developed 100+ 2D/3D models of catheter components in SolidWorks and Adobe Suite, submitted change orders through QMS, and then gathered quotes from multiple vendors to maintain competitive prices
- Created redline drawings to adequately reflect design changes from customers
- Performed COF tests using an ADMET machine to gather data to improve new coating formulas
- Collaborated with the Custom Coating Supervisor to design and document multiple advanced fixtures to coat catheter components while holding tight tolerances at a precise rate
- Designed fixtures using 3D printing to aid in mechanical testing and data analysis for Bruker machines
- Responded to a customer substrate complaint by running a test on the effect of the PTFE Coating Process on different types of Stainless Steel by using a Surface Profilometer and a Keyence Microscope
- Ran contract review meetings to update leadership on the status of quotes for custom catheter elements

Survivor Northeastern (Club that recreates the CBS reality show at Northeastern)   Boston, MA
Head of Challenge Design   *April 2024- Current*
- Transformed an executive board position of Survivor Northeastern by using engineering skills, such as SolidWorks, 3D printing, and woodworking, to execute 15 never before seen challenges
- Ordered materials and fabricated a challenge for 45$ instead of spending 400$ to buy the challenge online
- Delegated tasks to 12 members of the challenge committee to ensure each challenge ran smoothly
- Collaborated with the President of Tufts Survivor to develop vertical self-supporting 3D "Fire Puzzles"
- Utilized production members to test challenges in order to make necessary design and logistical changes

Phi Sigma Rho (Northeastern Engineering Sorority)   Boston, MA
Scholarship Director   *April 2023-April 2024*
- Planned and executed academic workshops while remaining in budget to promote scholarship
- Designed and prepared a bracelet maker to be 3D printed for members who demonstrated scholarship
- Ran an FEA simulation on the bracelet maker to simulate the loads applied when used

PROJECTS

Blue-Tube Rocket, *AeroNU*   *Dec 2023-May 2024*
- Built and launched a rocket from scratch using OpenRocket, Solidworks, and Laser Cutting.
- Designed bulkheads and fins that led to a successful launch with the rocket intact for further inspection

Robot Alarm System, *Electrical Engineering Final Course Project*   *Nov 2023-Dec 2023*
- Designed and constructed a mobile robot using C++, circuit theory, and logic gates
- Manufactured a cover for a distance sensor to make the circuit appear like a robot using 3D printing

Engineering Resilience Museum Exhibit, *Cornerstone Project*   *Sept 2022-Dec 2022*
- Invented and constructed an interactive quiz using Solidworks, Arduino, and C++ that entertained users
- Designed a monitoring casing on AutoCad and manufactured it using laser cutting and woodworking