

# Mackenzie Bernas

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<b>EDUCATION</b>	<b>B.S. Biomedical Engineering</b> GPA: 3.81/4.0, <b>Major GPA 3.88/4.0</b> Engr School Rank 660 out of 4085 (Top 16%)/ <b>Biomed Major Rank 22/149 (Top 15%)</b> Expected graduation: May 2026 Virginia Tech, Blacksburg, VA
<b>TECHNICAL SKILLS</b>	<b>CAD:</b> SolidWorks; Autodesk Inventor <b>Programming &amp; Data:</b> MATLAB; Arduino; R; Git <b>Signal &amp; Image Analysis:</b> Biosignal Processing; ImageJ; ilastik; GraphPad Prism <b>Hardware &amp; Prototyping:</b> Sensor Integration; Physiological Signal Acquisition
<b>PROFESSIONAL EXPERIENCE</b>	<b>Lab Assistant</b> , Wang Laboratory, Virginia Tech Blacksburg, VA Fall 2024-present <ul style="list-style-type: none"><li>Assisted in biomechanical tendon experiments including experimental setup, data collection, and analysis supporting tissue healing research.</li><li>Organized tendon histology images and references to support AI-assisted image recognition for objective grading.</li></ul> <b>Lab Tech</b> , Virginia Aquarium, Water Quality Lab, Virginia Beach, VA May 2023-July 2023 <ul style="list-style-type: none"><li>Performed titrations, calibrated instruments, and measured salinity, alkalinity, metals, and bacteria concentrations.</li><li>Executed a comparison study of E. coli methods vs. colony counts to improve contamination testing efficiency.</li></ul>
<b>HONORS</b>	<b>Dean's List 2021- 2025</b>
<b>SELECTED PROJECTS</b>	<b>Manual Blood Pressure Cuff Redesign</b> , Senior Design Project, Fall 2025-Present <ul style="list-style-type: none"><li>Redesigning valve mechanism of manual sphygmomanometer medical device for improved ergonomic control and deflation consistency</li><li>Developing CAD prototypes and experimental test methods to evaluate deflation rate accuracy and device performance</li></ul> <b>Biofeedback Wearable System</b> , Wearable Bioinstrumentation, Spring 2026 <ul style="list-style-type: none"><li>Developing wearable physiological monitoring system using PPG sensor, Arduino, and MATLAB to acquire and process heart rate and HRV signals.</li><li>Integrating sensor hardware and implementing signal filtering and peak detection for real-time biosignal processing and analysis</li></ul> <b>Pediatric Respiratory Rate Monitor</b> , Bioinstrumentation Lab, Spring 2025 <ul style="list-style-type: none"><li>Designed and prototyped a low-cost proof-of-concept device for pediatric respiratory rate measurement in low-resource settings.</li><li>Designed wearable respiratory monitoring device integrating strain sensor and thermistor with real-time signal acquisition and physiological data processing</li></ul> <b>Umbilical Cord Clamp</b> , BME Professional Practice, Fall 2024 <ul style="list-style-type: none"><li>Designed a 3D-modeled clamp with an alternative locking mechanism and anti-slip features for scalable 3D printing.</li></ul>
<b>AFFILIATIONS</b>	Society of Women Engineers (SWE)