Zoe Goudas

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EDUCATION

Rutgers University Honors College **New Brunswick, NJ**
Bachelor of Science in Biomedical Engineering; Minor in Mathematics *May 2027*
GPA: 3.73/4.0; Dean's List Fall 2024 – Spring 2026
Relevant Coursework: Biomaterials, Biomechanics, Biomedical Devices & Systems (with Lab), Biomedical Measurement & Analysis Lab, Principles of Drug Delivery, Biomedical Transport Phenomena, Numerical Modeling of Biomedical Systems, Probability & Statistics

SKILLS

Laboratory: Gel electrophoresis, ELISA, Western blot, Bradford assay, SDS-PAGE, mammalian & bacterial cell culture, aseptic technique, DNA/RNA extraction, PCR, HPLC, mass spectrometry, UV-Vis & Raman spectroscopy, SEM/TEM, MicroCT, tissue staining, immunofluorescence, microtome/cryotome sectioning, diamond wire cutting
Lab Safety: SDS review, PPE, biosafety cabinet, fume hood, autoclaving, biohazardous waste disposal
Mechanical Testing & Analysis: Instron testing, two- & three-point bending, instrumented indentation, stress-strain analysis, ECG, PPG, spirometry, FFT/signal processing, fluorescence image analysis
Experimental Design & Statistics: Experimental design, t-tests, ANOVA, linear/nonlinear regression
Programming/Software: Python, MATLAB, R, SolidWorks, GraphPad Prism, ImageJ/FIJI, Excel, Base44
Languages: English and German (fluent), Spanish and Greek (reading proficiency)

RESEARCH EXPERIENCE

Max Planck Institute of Colloids and Interfaces **Jun 2023 – Aug 2023**
Rotational Research Intern *Potsdam, Germany*
- Rotated through 16 biomaterials research groups spanning materials characterization, biochemistry, and mechanobiology
- Prepared and characterized biomaterial samples using Raman spectroscopy, SEM/TEM, MicroCT, HPLC, confocal microscopy, microtome/cryotome sectioning, diamond wire cutting, and instrumented indentation
- Performed SDS-PAGE, Bradford protein assays, tissue staining, and immunofluorescence
- Analyzed microscopy data in ImageJ/FIJI; documented procedures and results in an electronic lab notebook (ELN)

CLINICAL EXPERIENCE

Quality Medical Transport **Jan 2025 – Present**
Emergency Medical Technician *Barnegat, NJ*
- Perform patient assessments and lifesaving interventions in medical and trauma emergencies, using AEDs, CPAP, tourniquets, and hemostatic dressings
- Communicate patient status and assessment findings to hospital staff and dispatch
- Certifications: NJ EMT, CPR (AHA), Bloodborne Pathogens, HIPAA, ImageTrend ePCR, CEVO IV, ICS 100/200/700/800

Morganville Emergency Medical Services **Oct 2022 – Present**
Volunteer Emergency Medical Technician *Morganville, NJ*
- Lead EMS crews and coordinate patient care with local and mutual aid police, fire, and EMS agencies
- Train 10+ new EMTs and cadets in patient assessment, equipment use, documentation, and standard operating procedures

PROJECTS

Low-Cost Obstetric Simulator: *Senior Design Capstone* **Aug 2026 – Present**
- Collaborating with Rutgers-Newark Midwifery Nursing to develop a lower-cost obstetric training simulator
- Defining design requirements from student and instructor feedback, including anatomically realistic material properties, versatile birthing positions, and emergency delivery scenarios
- Evaluating a fabrication approach using SolidWorks CAD modeling, 3D printed molds, and silicone casting

Probiotic Anti-Inflammatory Hydrogel for Ulcerative Colitis: *Biomaterials Design Proposal* **Jan 2026 – Apr 2026**
- Proposed a sprayable hydrogel using engineered *E. coli* for localized IL-10 delivery to reduce colonic inflammation
- Designed an experimental plan to evaluate hydrogel porosity, diffusivity, biocompatibility, and mucus adhesion

Acellular Allograft Tissue Engineering: *Research Proposal, BME Measurement & Analysis Lab* **Jan 2026 – Apr 2026**
- Designed a histology protocol to evaluate cell repopulation and residual DNA on a modified acellular dermal allograft
- Specified DAPI/phalloidin immunofluorescence staining and DNA quantification to assess de/recellularization

Adaptive Heat Risk Coach App: *Topics in BME (Health Tech Innovation)* **Jan 2026 – Apr 2026**
- Prototyped an AI app predicting personal heat-illness risk from user-logged environmental, symptom, and sleep data
- Designed heat index, symptom-trend, and hydration alerts with an AI coach that adapts to user feedback

Independent Research: *Biotechnology High School* **Jan 2023 – Jun 2024**
- Designed and led experiments on *C. elegans* chemotaxis response to sound; presented at 2 regional science fairs