

James Boucher

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Education

Anticipated Fall 2026: Master of Business Administration, University of Massachusetts Lowell

- General Business Option

Master of Engineering, Rensselaer Polytechnic Institute – August 2021

- Biomedical Engineering Major

Bachelor of Science in Engineering, University of Massachusetts Lowell – May 2020

- Biomedical Engineering Major & Mathematics Minor; *Summa Cum Laude*

Work Experience

Instructional Lab Manager, Biomedical Engineering – UMass Lowell – May 2022 to Present

- Overseeing daily operations of multiple teaching and research Biomedical Engineering laboratories
- Teaching lecture and laboratory courses in addition to daily job duties
- Ensuring lab safety, equipment functionality, and inventory management to facilitate smooth operations.
- Supervising student staff, ensuring compliance with safety protocols and efficient resource utilization
- Operating, troubleshooting, and repairing lab equipment while sharing expertise to others through training
- Managing laboratory budgets, including procurement, invoice processing, and vendor coordination

Product Analysis Engineer – Abbott Laboratories – September 2021 to May 2022

- Analyzed post-market Left Ventricular Assist Devices (LVADs)
- Investigated and responded to customer complaints with regulatory considerations
- Utilized laboratory equipment for imaging, electrical testing, and hydraulic qualification

Teaching and Academic Experience

Instructor, Biomedical Engineering – UMass Lowell – Summer 2025, Fall 2025, and Summer 2026

- Courses taught: Bioinstrumentation Lecture & Lab, Quantitative Physiology Lecture & Lab
- Designed and implemented course materials, hands-on experiments, and assessments

Graduate Teaching Assistant – Rensselaer Polytechnic Institute – Fall 2020 to Summer 2021

- Courses: Biomedical Engineering Product Development, Biomaterials, Introduction to Biology
- Provided assignment feedback, guided students with problem-solving, and created assessment questions

Course Grader, Biomedical Engineering – UMass Lowell – Fall 2019 to Spring 2020

- Courses: Biomaterials, Biomedical Engineering II
- Contributed extensive student feedback to coursework problems and provided faculty support

Projects and Activities

FIRST Robotics Competition – Mentor – Team 1474 Tewksbury Titans – Fall 2024 to Present

- Guiding a group of dedicated high school students on complex STEM project
- Training students with CAD software (OnShape) and guiding their design process
- Sourcing, purchasing, and maintaining accurate financial records

Tracheal Tube Positioning Indicator – Mentor – Biomedical Engineering Capstone – Spring 2026 to Summer 2026

- Mentored team designing a device to provide clinicians with feedback for positioning and maintaining the position of tracheal tubes

Volume-Metered Pacing Cup – Mentor – Biomedical Engineering Capstone – Spring 2024 to Summer 2024

- Mentored team designing controlled-dispense drinking device for individuals with sensory regulation challenges
- Coordinated with clinical sponsors to refine requirements and ensure user-centered design approach
- Guided prototyping and testing of mechanical flow control using food-safe materials

Bioreactor Mixer System – Mentor – Biomedical Engineering Capstone – Fall 2023 to Spring 2024

- Mentored team designing small-scale bioreactor impeller to improve mixing and reduce dead zones
- Guided CAD, prototyping, and fabrication using 3D printing and laboratory resources
- Advised experimental validation including dye testing, CFD modeling, and system performance analysis

Eyedrop Administration Device – Mentor – Biomedical Engineering Capstone – Spring 2023

- Mentored team developing assistive device enabling independent eyedrop administration for individuals with upper limb disabilities

- Collaborated with industry sponsor to translate user needs into engineering design requirements
 - Guided prototyping, mechanical design, and usability testing for safe and effective device operation
- Hahn Tissue Laboratory – Graduate Student – Rensselaer Polytechnic Institute – Spring 2021
- Performed laboratory techniques including microscopy, Western blotting, and immunocytochemistry
 - Gained experience in aseptic technique on mammalian cell culture without antibiotic media additives
 - Expanded adherent mammalian cell lines and seeded onto biomaterial scaffolds for multi-week culture experiment

Honors and Awards

Excellence in Teaching Support Award – UMass Lowell Biomedical Engineering – 2020

Valedictorian – Tewksbury Memorial High School – 2016

Eagle Scout – Boy Scouts of America – 2016

Certifications

SOLIDWORKS Technology Educator Competency Exam (TECE), June 2024

SOLIDWORKS Accredited Educator, June 2024

SOLIDWORKS Associate Certificate, November 2016