

# Angelica Knudsen

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## EDUCATION

### Massachusetts Institute of Technology (MIT)

Candidate for Bachelor of Science, Mechanical Engineering and Physics

Cumulative GPA: 4.5/5.0

Coursework (including courses I'll take in current school year):

- Mechanical Engineering: Mechanics and Materials I, Dynamics and Control I&II, Thermal-fluids Engineering I&II, Numerical Computation in MATLAB, Designing for the Future, Electronics for Mechanical Systems
- Physics: Classical Mechanics, Electricity and Magnetism, Waves and Vibrations, Quantum Physics I, Statistical Physics, Special Relativity, Physics of Energy

Cambridge, MA

Expected May 2026

## EXPERIENCE

### MIT Department of Mechanical Engineering

Incoming SuperUROP Researcher at Hatsopoulos Microfluids Laboratory

- Using contact angle goniometer to measure static contact angle of water drop on feathers of ruby-throated hummingbird
- Using optical microscopy and scanning electron microscopy to assess hierarchical structure of barbes, barbules, and hooklets of iridescent and non-iridescent feathers
- Synthetically reconstructing feathers using glass capillaries to compare properties with those of hummingbird feathers

Cambridge, MA

Sep 2024 – Present

### MIT Department of Physics

Incoming 8.01 (Classical Mechanics) Undergraduate Teaching Assistant

8.02 (Electricity and Magnetism) Undergraduate Teaching Assistant

New York, NY

Sep 2024 – Present

Feb 2024 – May 2024

### MIT Sea Grant

Student Researcher on Coastal Acidification on the Gulf of Maine

- Researched calibration methods and established SOPs for Manta +35, Hanna, and YSI Castaway sensors
- Visited oyster nurseries and farms and deployed sensors for weeks at a time
- Processed and graphed data using Python onto user interface

Cambridge, MA

Aug 2024 – Present

## PROJECTS

### Yarn Winder

- Built entirely out of scavenged parts within 1 week (total cost: \$0)
- Included acrylic gears and plywood base laser cut from scraps

Aug 2024

### Modular Water Collector for Drone - Proof of Concept Class Project

- Collaborated to build peristaltic pump on gear-bearing revolver to suck in and empty water into 8 100mL test tubes
- Used CAD to laser cut and 3D print gear bearing revolver and test tube holder
- Designed system to attach to feet of drones with sufficient weight-carrying capacity

Apr 2023 – May 2023

### Ladder Climbing Robot for Activities Showcase

- Collaborated with other members of MIT Robotics Team to build robot
- Designed a hinging mechanism that smoothly glides over and snaps onto rungs of ladder using rubber bands

Feb 2023 – May 2023

## ACTIVITIES

### MIT Robotics Team

Mechanical Engineering Subteam Member

Cambridge, MA

Feb 2023 – May 2023

## ADDITIONAL

**Languages:** Python, MATLAB, C++

**Manufacturing:** Laser Cutter, Mill, Bandsaw, Drill Press, 3D printer (Used Prusa, Creality, Bambu, and MakerBot), Soldering

**CAD:** Autodesk Fusion 360, Rhino, SOLIDWORKS

**Awards:** 2022 VEX Robotics ND State Champion and Worlds Qualifier, 2022 U.S. Presidential Scholar Semifinalist, 2021 FBLA Cybersecurity State Champion