# Eric H. Balch

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## EDUCATION

**University of California, Los Angeles** *Graduation June 2028*
Bachelor of Science in Mechanical Engineering GPA 4.0/4.0

- *Coursework:* Fluid Mechanics, Statics & Strength of Materials, Thermodynamics, Physics Mechanics, Oscillations/Waves/E&M, Optics & Special Relativity, Chemical Structure & Energetics, Differential Equations, Integral/Multivariable Calculus, Linear Algebra

**Mountain View High School**, Mountain View, CA *Graduation June 2024*
Honors Diploma GPA 4.7/4.0

## WORK EXPERIENCE

*Bioengineering Intern, Stanford University* *June—Sept 2023*
*Cardiovascular Biomechanics Computation Lab*

- Conduct modeling (segmentation, model building, meshing) for computational fluid dynamics (CFD) simulations to understand coronary artery disease and physiology
- Model pipeline for cardiovascular anatomic models of patient-specific coronary bypass procedures (e.g., grafts) to analyze changing hemodynamics of different attachment locations
- Create all segmentations and run CFD simulations to evaluate standard graft with resistor and complex boundary conditions (e.g., coronary BCs) to consider the effects of multiple stenoses

*Lifeguard and Swim Instructor, City of Mountain View* *June 2021–Sept 2025*

- Head Guard leadership role supervising a staff of up to 5 lifeguards
- Teach swimming skills, both water safety and stroke mechanics, for all ages children to adults
- Certified to perform emergency medical care, including CPR and water rescues

## RELEVANT PROJECTS

*Responsible Engineer for Bruin Formula SAE Racing Drivetrain Team* *June 2025–present*

- Design (SolidWorks) front/rear sprockets and motor shaft to transmit power to vehicle wheels
- Iteratively FEA-test (ANSYS Workbench) part geometry to optimize slotting & reduce weight

*Responsible Engineer for Bruin Formula SAE Racing New Member Project* *Sept 2024–June 2025*

- Designed (SolidWorks) assembly to stress test motor-to-sprocket power transmission chain
- FEA-tested (ANSYS Workbench) hook geometry strength; confirmed with manual calculations

*Team Lead & Lead Designer of complex projects for Engineering Lab course* *Sept 2022–June 2024*

- Designed and built winning wireless car parking lot sensors & display for CTE Capstone project
- Designed and built winning robots for two Vex Robotics timed competitive challenges
- Designed and built hydraulic arm to perform timed competitive precision challenges
- Coordinated team member contributions and presented product design results to class

## LEADERSHIP AND EXTRACURRICULARS

- Bruin Formula Racing Team leadership team, Formula SAE competition (2024–present)
- Silicon Valley Bike Exchange bike mechanic, repairing used bicycles for donation (2018–2024)
- Teaching Assistant for AP US History (2023–2024); assist with grading and classroom tasks
- Varsity water polo (2021–2024) and Varsity track & field hurdler (2022–2024)

## SKILLS

- **Software:** SolidWorks, ANSYS, MATLAB, Fusion 360, Paraview, MS Office, Gemini, ChatGPT Java & Python coding
- **Machines:** Drill Press, Band Saw, 3D Printer, Lathe, Mill
- **Certifications:** Festo NC3 Mechatronics, OSHA 10