

Owen James Weisenberger

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Education

- Syracuse University
- B.S. Aerospace Engineering, May 2026
- Physics Minor, GPA 3.5
- Florence, Italy, Study Abroad Program

Technical Skills

- Technical: Material selection, Fatigue life prediction, Structural optimization, 3D Printing
- General Software: SolidWorks, MATLAB, Ansys, LabVIEW, Microsoft Office

Course Experience:

Fall 2024

Aerodynamic Analysis

- Conducted subsonic wind tunnel experiments on vortex shedding, wake behavior, boundary layers, and airfoil stall
- Developed a MATLAB solver for a numerical source/vortex panel method to analyze the effect of angle of attack and ground effects on velocity and pressure

Spring 2025

Aerospace Structure Design

- Designed and optimized an I-beam wing spar to withstand specified aerodynamic loads while minimizing weight
- Performed stress/deflection analysis, shear calculations, and fatigue life estimation (Palmgren-Miner rule)
- Utilized MMPDS material data to balance strength, stiffness, and density in structural trade-off studies

Spring 2025

Supersonic Flow

- Calibrated a supersonic blowdown tunnel (Mach ~3) using pressure transducers, pitot probes, and Schlieren imaging
- Applied isentropic relations and Rayleigh pitot equations to determine Mach number; validated results with Schlieren analysis
- Performed uncertainty analysis on instrumentation and measurement error to assess tunnel accuracy
- Investigated supersonic cavity flow, analyzing shear-layer instabilities and pressure fluctuations with applications to weapons bay acoustics and aerodynamic heating

Academic Projects

Spring 2023

SolidWorks Multi-Tool Modeling - Team Project

- Measured and reverse-engineered a multi-tool, recreating all components in SolidWorks with proper tolerances
- Produced a fully assembled CAD model with technical drawings to demonstrate manufacturability and fit
- Learned how to take precision measurements, CAD modeling, and engineering documentation

Fall 2024

Rocket Trajectory Modeling - Team Project

- Applied Euler's Method and numerical ODE solving to predict bottle rocket velocity over time
- Used Kepler Space Program as a comparative simulation environment to test assumptions
- Conducted a physical bottle rocket launch, comparing experimental results against numerical and simulated models
- Demonstrated how simplified ODE models capture general rocket dynamics while highlighting sources of error

Professional Experience

Fall 2025 - Present

Research Assistant, Syracuse University

Project: Noise Reduction in Laser Interferometry Systems

- Conducted experiments and simulations to identify and mitigate thermal, seismic, and optical noise sources in high-precision interferometers
- Developed and tested methods to improve signal-to-noise ratio for gravitational-wave detection
- Collaborated with faculty and graduate researchers to refine optical setups and analyze interferometric data

Fall 2025 - Present

Senior Capstone, Syracuse University

Project: Corian® Solid Surface Reversible Joints

- Collaborated with DuPont engineers and university professors to design a new mechanical joining method for DuPont's Corian® Solid Surfaces (CSS) product
- Combined simulations through Ansys, theoretical calculations, and testing with a universal testing machine (UTM) to validate joining methods for various use cases depending on customer needs

Fall 2025 - Present

AEW Facilitator, Syracuse University

- Mentor Collaborative Calculus I workshops for dozens of student peers weekly
- Develop and implement weekly lesson plans based on feedback and experience to address diverse student needs
- Train with fellow facilitators in dialogue circles/workshops to create a productive study environment