

Nicholas Cicora

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Education

Purdue University, West Lafayette, Indiana

Expected May 2025

Bachelor of Science in Aeronautical and Astronautical Engineering

GPA: 3.36/4.0

Dean's List

August 2021-May 2023

Professional Experience

Maurice J. Zucrow Labs, West Lafayette, Indiana

Undergraduate Research Assistant

May 2023-Present

- Operated Rotating Detonation Engines via LabVIEW VI for 5 test campaigns over hundreds of hotfires
- Supported 6 additional RDE test campaigns by saving data, calculating set pressures, and entering conditions into TOD
- Set up instrumentation including UNIK 5000 and PCB PTs, TCs, and Phantom high-speed cameras to gather test data
- Taught undergrad and grad students how to operate test cell fluid systems to bring everything online for testing
- Designed and analyzed stress in a flange component for a vitiator combustor to verify bolt strength with ANSYS
- Produced ASME Y14.5 drawings for 10+ parts to convey design intent and ensure fit during assembly with tolerancing
- Designed critical parts of a high pressure, high temperature wind tunnel sized to simulate a jet engine environment
- Facilitated 3 jet-in-crossflow testing campaigns using laser diagnostic techniques such as PDA and Planar Mie Scattering
- Modelled fluid panel with 11 lines of gaseous fuel, air, and oxidizer lines and sourced fittings, valves, and regulators
- Assembled 3 fluid panels by bending and flaring tubes, installing valves, venturis, and regulators, and wiring sensors
- Iterated on an aerosol aerodynamic focusing flow system for data collection in an image classification project
- Rewired, replumbed, and recertified a test cell for testing of a RP1/O2 torch igniter and supported multiple test firings

Bechtel Innovation Design Center, West Lafayette, Indiana

Machining Peer Mentor

August 2022-December 2024

- Trained in operation of Haas VF-2/VF-4 CNC mills, Haas ST-20/Y lathes, FLOJET waterjets, and bandsaws
- Consulted with students on design of parts, CAM optimization, and machine availability to complete projects
- Instructed members on proper speeds and feeds for solid carbide and HSS tooling to maximize tool lifetime
- Utilized advanced manufacturing techniques such as 5-axis milling and live-tooling on lathes for complex geometry
- Taught students the operation of CNC mills and lathes to manufacture a wide range of parts
- Wrote SOPs for CNC machines to better train new students and explain the most essential operations of each machine
- Performed weekly maintenance on machines to upkeep tolerances and steady operation with minimal downtime
- Compiled accurate documentation on 20+ workholding methods for BIDC website to communicate capabilities
- Developed complex workholding methods to maintain rigidity and proper surface finish on parts

Technical Team Experience

Purdue Space Program Liquids Team, West Lafayette, Indiana

Manufacturing Lead

January 2023-May 2025

- Formed subteam to oversee the manufacturing of a liquid-fueled rocket aiming for 50k+ feet in altitude
- Approved all CAM to prevent machine crashes and make sure parts meet desired specifications and tolerances
- Machined tough materials such as 718 Inconel and 321 stainless steel with specialized carbide tooling
- Developed manufacturing plans ahead of vehicle design reviews so parts stay within machine and tooling capabilities
- Coordinated part manufacturing flow and resource allocation for subteams to ensure timely production
- Post-machined 3D printed propulsion components such as the injector to enable proper sealing and correct dimensions
- Created detailed slide decks and Confluence pages to serve as comprehensive CAM learning materials
- Assigned JIRA tasks to track progress and keep engineers accountable for the manufacturing of assigned part
- Supervised production of 50+ parts and resolved machine and CAM issues to prevent stoppages and scrapped parts

Propulsion Engineer

August 2021-January 2023

- Wrote MATLAB code to model impact of throat ablation on rocket performance on silica-phenolic and graphite throats

Skills

SOLIDWORKS | Siemens NX | MATLAB | Microsoft Office | Fusion 360 CAM | JIRA | Confluence | GD&T | ANSYS Mechanical