Derek C. Max

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Education

University of Florida *May 2028*

B.S. Mechanical Engineering & Aerospace Engineering | GPA: 3.7/4.0

Relevant Coursework: Mechanical Engineering Design I, Mechanics of Materials, Numerical Methods, Control of Dynamic Systems, Astrodynamics, Aerodynamics, Thermodynamics I

Honors: Dean's List (Fall 2024, Spring 2025, Fall 2025); President's Honor Roll (Fall 2024, Fall 2025)

Skills

CAD & Analysis: SolidWorks, ANSYS / SolidWorks Simulation, MATLAB, LabVIEW, Microsoft Excel / Word / PowerPoint

Mechanical Design: CAD, static structural FEA, tolerancing & fits, fastener selection, component/interface definition, hardware packaging, analytical verification

Build & Test: Machining, precision measurement, mechanical assembly, instrumentation, data acquisition, hardware test planning, engineering documentation

Certification: Certified SOLIDWORKS Associate (CSWA) - Mechanical Design; BACE Certification

Project Experience

Reaction-Wheel Cube - Single-Vertex Balancing | Independent Project **Aug 2026 - Present**

- Designed a 150 mm reaction-wheel cube for single-vertex balancing by packaging three orthogonal flywheel assemblies, motor controllers, a battery, and structural mounts in SolidWorks.
- Sized the reaction-wheel system by calculating rigid-body inertia, gravitational torque, required wheel torque, and angular-momentum capacity to evaluate candidate BLDC motors and flywheels.
- Validated the mechanical layout by performing interference and clearance analyses, iterating component placement to maintain approximately 3.2 mm between adjacent wheel envelopes and 2 mm at the critical controller-to-mounting-plate interface.

LabVIEW Pressure-Vessel Instrumentation & Analysis | Mechanics of Materials Lab **Summer 2026**

- Developed a LabVIEW data-acquisition setup with dual strain-gauge/amplifier channels to tare, acquire, and log hoop and axial strain during pressure-vessel testing.
- Calibrated instrumentation and compared measured response with mechanics-of-materials predictions using uncertainty analysis, strengthening hands-on experience with measurement, validation, and troubleshooting test data.

Air Engine Design & Manufacturing | Design & Manufacturing Lab **Spring 2026**

- Machined and assembled functional air-engine components using a manual lathe, vertical mill, drilling, and tapping; verified dimensions with precision measurement tools during fabrication and fit-up.
- Applied tolerancing, fits, fastener selection, and manufacturing-process planning to produce functional hardware and resolve fit-up issues during mechanical integration.

SolidWorks Structural Analysis & Design Verification | Course Project **Fall 2026**

- Built static structural studies in SolidWorks Simulation using defined loads, fixtures, material properties, and mesh settings to evaluate stress and displacement.
- Compared simulation results with analytical and failure-criterion checks; documented assumptions, safety margins, and design implications to support verification and design iteration.

Engineering Experience

Solar Gators | Aerobody Team Member **Dec 2025 - Jul 2026**

University of Florida, Gainesville, FL

- Contributed to aerodynamic fairing and body-structure design for a solar vehicle, coordinating design decisions with structural, manufacturing, and vehicle-integration needs.
- Supported fastener selection, manufacturability, and aerodynamic testing within a multidisciplinary student engineering team.

Additional Experience

Mathnasium | *Mathematics Instructor* *Jul 2023 - Aug 2025*

Boca Raton, FL

- Tutored 300+ students from elementary mathematics through differential equations, adapting technical explanations and problem-solving methods to individual learning needs.
- Managed concurrent student sessions and tracked progress across individualized learning plans, strengthening communication, organization, and time-management skills.