Patrick Brennan

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Education

University of North Carolina at Charlotte – BS in Mechanical Engineering — Expected May 2027
Concentration in Energy, Minor in Mathematics | GPA: 3.55

Projects

Detection of Blocked Cooling Holes Using Infrared Thermography — **Siemens Energy**

- Designed an NDT mechanism for gas turbine blades, using IR thermography to detect blocked cooling holes
- Created a system to send hot air through turbine blades at a consistent temperature and pressure
- Cooperated with team members to schedule deadlines and create design reviews to track progress

Pick and Place Robot — Link to Project Tab

- Engineered a robot with four degrees of freedom to pick up and drop off eight spheres both autonomously and manually in under five and three minutes, respectively, using Arduino and SolidWorks
- Utilized DFMA principles to fabricate parts using FDM 3D printing, turning, milling, and sheet metal cutting
- Designed two rotational axes using stress-strain curves and kinematics to ensure proper strength and precision

Sophomore Design Portfolio — Link to Design Portfolio

- Designed multiple common engineering parts such as trusses, brackets, motor mounts, pulleys, and lead screws
- Developed CAD models based on a multitude of engineering design equations and practices
- Tested designs using FEA to ensure that they meet the design criteria and change components to meet them
- Applied tolerances from the Machinery's Handbook to parts, providing proper fit for their intended purpose
- Generated detailed portfolio posts that highlight every step taken in the design process

Go Kart Engine Rebuild

- Refurbished an old nine-horsepower engine by adding a gas tank and replacing the carburetor and crankshaft, which led to taking apart and rebuilding the entire engine

Work Experience

Teaching Assistant, William States Lee College of Engineering – Charlotte, NC — August 2025 – Present
MEGR 2156/7 - Design Project Labs I

- Assisted students in learning how to use topics ranging from Statics, Solid Mechanics, CAD, basic FEA, general tolerancing and more to properly design parts that reflect what they might do in the workforce
- Analyzed and graded assignments for proper documentation and understanding of the process through assignments such as tests and portfolio posts, giving well-thought-out feedback on the students' process

Teaching Assistant, William States Lee College of Engineering – Charlotte, NC — August 2024 – May 2025
ENGR 1202 - Intro to Engineering II

- Taught students how to use CAD modeling software for the first time, ending the semester building an assembly of an air engine that could be animated and was later manufactured in MEGR 2156/7
- Troubleshot many common and difficult problems that students would come across in their software during a fast-paced class period to help them not fall behind

Track Marshall, Rush Hour Karting – Morrisville, NC — Dec 2022 – August 2024

- Communicated with coworkers to help out where needed, completing tasks from safety briefings and helmet fittings to teaching axe throwing and assisting in opening a new location

Skills

Software: SolidWorks, Creo, MATLAB, Microsoft Office, LabVIEW, Revit
Manufacturing: Mechanical Design, Manual Machining, FDM 3D printing, DFMA