Rutgers University

Department of Mechanical & Aerospace Engineering

2025-2026 Senior Design Projects

14:650:487/488 Aerospace Engineering Design I/II

Aerospace Engineering Projects

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AE PROJECT 1

Mechanical Bird

Advisor: Prof. Prosenjit Bagchi

Email: pbagchi@soe.rutgers.edu

Project Goals: Conceptualize, design, fabricate and demonstrate a mechanical device that can fly like a bird using flapping and morphing wings

Project Envisioned Outcomes: robot bird

Students Expertise:

	None	Beginner	Intermediate	Serious Hobbyist	Professional
Design			☑		
Analysis			☑		
Hand tools			☑		
Traditional Machining			☑		
CNC machining					
3D printing			☑		
Welding					
Wiring					
Simple analog or digital electronics (e.g., resistors, capacitors, op-amps)			☑		
Microcontrollers (e.g., Arduino)			☑		
Bonding					
Processing (e.g., vacuum bag, autoclave)					

Software Expertise:

	None	Beginner	Intermediate	Serious Hobbyist	Professional
Matlab			☑		
Comsol					
Python					
Ansys			☑		
SolidWorks			☑		
Other CAD packages					
Siemens NX					
LabView					
E-Calc					
AVL					
Xfoil					
Machine vision program					

AE PROJECT 2

A Mobile Manipulator System to Support Satellite PRO Studies

Advisor: Prof. Xiaoli Bai

Email: xiaoli.bai@rutgers.edu

Project Goals: to construct a mobile manipulator system that can autonomously emulate a chaser satellite's motion around a target object

Project Envisioned Outcomes:

Students will learn and practice their skills related with base design, driver design, power system design, and mini PC programming for control and communication.

Students Expertise:

	None	Beginner	Intermediate	Serious Hobbyist	Professional
Design				☑	
Analysis				☑	
Hand tools				☑	
Traditional Machining				☑	
CNC machining				☑	
3D printing				☑	
Welding				☑	
Wiring				☑	
Simple analog or digital electronics (e.g., resistors, capacitors, op-amps)				☑	
Microcontrollers (e.g., Arduino)				☑	
Bonding				☑	
Processing (e.g., vacuum bag, autoclave)			☑		

Software Expertise:

	None	Beginner	Intermediate	Serious Hobbyist	Professional
Matlab			☑		
Comsol				☑	
Python				☑	
Ansys				☑	
SolidWorks				☑	
Other CAD packages			☑		
Siemens NX			☑		
LabView			☑		
E-Calc			☑		
AVL			☑		
Xfoil			☑		
Machine vision program			☑		

AE PROJECT 3

Rutgers Rotational Stability Demonstrator

Advisor: Prof. Haim Baruh

Email: baruh@soe.rutgers.edu

Project Goals and Envisioned Outcomes:

This project aims to design a contraption that demonstrates that the free (unrestricted) motion of several objects becomes unstable with time. For example, one can take a rectangular-shaped object and spin it about its axes. It is well known that rotation about the axis of intermediate moment of inertia is unstable. It is also known that for shapes like the letter T, there are additional rotational instabilities. In this project, we will build a contraption and design several different-shaped objects so that the instability can be visually demonstrated. One possibility is to take an already-built gimbal (or build one ourselves), and modify it to take on different payloads. Please note that execution of this project involves some dynamics simulations.

Prof. Baruh showed a YouTube video of this phenomenon to a group of high school students and the students found the concept very intriguing. We would like to take this contraption for demonstrations at local high schools or at science fairs.

Students Expertise: (Please contact the advisor for more information)

	None	Beginner	Intermediate	Serious Hobbyist	Professional
Design					
Analysis					
Hand tools					
Traditional Machining					
CNC machining					
3D printing					
Welding					
Wiring					
Simple analog or digital electronics (e.g., resistors, capacitors, op-amps)					
Microcontrollers (e.g., Arduino)					
Bonding					
Processing (e.g., vacuum bag, autoclave)					

Software Expertise: (Please contact the advisor for more information)

	None	Beginner	Intermediate	Serious Hobbyist	Professional
Matlab					
Comsol					
Python					
Ansys					
SolidWorks					
Other CAD packages					
Siemens NX					
LabView					
E-Calc					
AVL					
Xfoil					
Machine vision program					

AE PROJECT 4

Accessing a Lunar Lava Tube

Advisor: Prof. Haym Benaroya

Email: benaroya@soe.rutgers.edu

Project Goals: Design a system that can deliver people/materials to the opening of a lunar lava tube.

Project Envisioned Outcomes: Learn about lunar environment, lunar lava tubes, and the challenges to survival. Use this understanding to conceptualize and design an accessing system, and construct an idealized version of the design.

Students Expertise:

	None	Beginner	Intermediate	Serious Hobbyist	Professional
Design			☑		
Analysis			☑		
Hand tools		☑			
Traditional Machining		☑			
CNC machining	☑				
3D printing			☑		
Welding	☑				
Wiring	☑				
Simple analog or digital electronics (e.g., resistors, capacitors, op-amps)		☑			
Microcontrollers (e.g., Arduino)		☑			
Bonding	☑				
Processing (e.g., vacuum bag, autoclave)	☑				

Software Expertise:

	None	Beginner	Intermediate	Serious Hobbyist	Professional
Matlab		☑			
Comsol		☑			
Python					
Ansys		☑			
SolidWorks		☑			
Other CAD packages					
Siemens NX					
LabView					
E-Calc					
AVL					
Xfoil					
Machine vision program					

AE PROJECT 5

Design and Testing of a Liquid Rocket Propulsion System

Advisor: Prof. Steven Berg

Email: steven.berg@rutgers.edu

Project Goals: This project will involve design and construction of a liquid rocket engine (LRE) intended to be scalable for future RPL rocket applications. The liquid engine will use Nitrous Oxide/Kerosene propellants and make use of the test stand built as part of the 2024-2025 project. The primary goal of this year's project will be to scale thrust to a level of 2200 N and develop requirements to scale 10x the following year.

Project Envisioned Outcomes:

-Design of a 2200 N thrust chamber

-Testing and demonstration to 2200 N thrust level

-Identification of requirements to scale 10x (includes test stand/facilities)

Students Expertise:

	None	Beginner	Intermediate	Serious Hobbyist	Professional
Design				☑	
Analysis				☑	
Hand tools				☑	
Traditional Machining				☑	
CNC machining			☑		
3D printing			☑		
Welding		☑			
Wiring		☑			
Simple analog or digital electronics (e.g., resistors, capacitors, op-amps)			☑		
Microcontrollers (e.g., Arduino)		☑			
Bonding		☑			
Processing (e.g., vacuum bag, autoclave)	☑				

Software Expertise:

	None	Beginner	Intermediate	Serious Hobbyist	Professional
Matlab			☑		
Comsol			☑		
Python			☑		
Ansys			☑		
SolidWorks				☑	
Other CAD packages				☑	
Siemens NX				☑	
LabView			☑		
E-Calc	☑				
AVL	☑				
Xfoil	☑				
Machine vision program	☑				

AE PROJECT 6

Design and Testing of a 200 W Hall Thruster

Advisor: Prof. Steven Berg

Email: steven.berg@rutgers.edu

Project Goals: The goal of this project will be to design, build, and demonstrate a 200 W Hall thruster. The thruster shall be designed such that the gas injection plate can be removed and replaced. The design shall use Argon gas. Power supplies, feed system elements, and access to vacuum test facilities will be provided by the SPACE Lab @ RU. The test plan shall minimize vacuum chamber down time.

Project Envisioned Outcomes:

-Design of 200 W Hall thruster

-Demonstration and testing of 200 W hall thruster

Students Expertise:

	None	Beginner	Intermediate	Serious Hobbyist	Professional
Design				☑	
Analysis			☑		
Hand tools				☑	
Traditional Machining			☑		
CNC machining			☑		
3D printing			☑		
Welding		☑			
Wiring			☑		
Simple analog or digital electronics (e.g., resistors, capacitors, op-amps)			☑		
Microcontrollers (e.g., Arduino)		☑			
Bonding	☑				
Processing (e.g., vacuum bag, autoclave)	☑				

Software Expertise:

	None	Beginner	Intermediate	Serious Hobbyist	Professional
Matlab			☑		
Comsol			☑		
Python			☑		
Ansys			☑		
SolidWorks			☑		
Other CAD packages			☑		
Siemens NX			☑		
LabView			☑		
E-Calc	☑				
AVL	☑				
Xfoil	☑				
Machine vision program	☑				

Additional Information:

https://arc.aiaa.org/doi/abs/10.2514/6.2025-0063

AE PROJECT 7

Synergistic Wind and Water Power - WET Center Project

Advisor: Prof. Onur Bilgen

Email: o.bilgen@rutgers.edu

Project Goals: The goal of the project is to develop a synergistic renewable energy system that combines wind energy and water power. The senior design project is part of a university-funded project called the WET Center Project.

Project Envisioned Outcomes: Several hybrid energy systems will be designed, analyzed, manufactured and tested. The team will gain experience in these areas.

Students Expertise:

	None	Beginner	Intermediate	Serious Hobbyist	Professional
Design				☑	
Analysis				☑	
Hand tools				☑	
Traditional Machining				☑	
CNC machining				☑	
3D printing				☑	
Welding	☑				
Wiring				☑	
Simple analog or digital electronics (e.g., resistors, capacitors, op-amps)				☑	
Microcontrollers (e.g., Arduino)				☑	
Bonding				☑	
Processing (e.g., vacuum bag, autoclave)				☑	

Software Expertise:

	None	Beginner	Intermediate	Serious Hobbyist	Professional
Matlab				☑	
Comsol		☑			
Python				☑	
Ansys		☑			
SolidWorks				☑	
Other CAD packages				☑	
Siemens NX		☑			
LabView		☑			
E-Calc		☑			
AVL	☑				
Xfoil		☑			
Machine vision program		☑			

AE PROJECT 8

Turbine and Propulsion Test Setup - WET Center Project

Advisor: Prof. Onur Bilgen

Email: o.bilgen@rutgers.edu

Project Goals:

"The goal of the project is to design, test, and validate an experimental setup for testing turbines and propellers in a low-speed wind tunnel. The senior design project is part of a university-funded project called the WET Center Project. The students should be very comfortable with the following: 1) Design/analysis and programming software such as Matlab, Ansys, Solid Works, Siemens NX or other CAD packages, LabVIEW, etc.; 2) Simple analog or digital electronics such as resistors, capacitors, op-amps, microcontrollers (i.e. Arduino, Raspberry Pi), wiring, soldering, etc.; 3) Fabrication techniques such as 3D printing, bonding, vacuum bagging, manual fabrication, etc."

Project Envisioned Outcomes: An experimental setup will be designed, analyzed, manufactured and tested. The team will gain experience in these areas.

Students Expertise:

	None	Beginner	Intermediate	Serious Hobbyist	Professional
Design				☑	
Analysis				☑	
Hand tools				☑	
Traditional Machining			☑		
CNC machining		☑			
3D printing				☑	
Welding	☑				
Wiring				☑	
Simple analog or digital electronics (e.g., resistors, capacitors, op-amps)				☑	
Microcontrollers (e.g., Arduino)				☑	
Bonding				☑	
Processing (e.g., vacuum bag, autoclave)				☑	

Software Expertise:

	None	Beginner	Intermediate	Serious Hobbyist	Professional
Matlab				☑	
Comsol				☑	
Python			☑		
Ansys		☑			
SolidWorks				☑	
Other CAD packages				☑	
Siemens NX				☑	
LabView			☑		
E-Calc			☑		
AVL			☑		
Xfoil			☑		
Machine vision program	☑				

AE PROJECT 9

Shock Tunnel Enhancement

Advisor: Prof. Edward DeMauro

Email: ed451@soe.rutgers.edu

Project Goals: A continuation from the past year, students are tasked with improving upon and quantifying the performance of the table-top shock tunnel. Experiments will be included to assess its performance.

Project Envisioned Outcomes:

Demonstrate hypersonic flow is achieved

Make structural changes to improve performance

Quantify the results

Students Expertise:

	None	Beginner	Intermediate	Serious Hobbyist	Professional
Design			☑		
Analysis			☑		
Hand tools			☑		
Traditional Machining			☑		
CNC machining		☑			
3D printing	☑				
Welding			☑		
Wiring		☑			
Simple analog or digital electronics (e.g., resistors, capacitors, op-amps)		☑			
Microcontrollers (e.g., Arduino)		☑			
Bonding	☑				
Processing (e.g., vacuum bag, autoclave)	☑				

Software Expertise:

	None	Beginner	Intermediate	Serious Hobbyist	Professional
Matlab			☑		
Comsol	☑				
Python	☑				
Ansys		☑			
SolidWorks			☑		
Other CAD packages			☑		
Siemens NX		]	☑		
LabView		☑			
E-Calc	☑				
AVL	☑				
Xfoil	☑				
Machine vision program	☑				

AE PROJECT 10

Busch Campus Goose Destroyer (The Fowl Grim Reaper)

Advisor: Prof. Edward DeMauro

Email: ed451@soe.rutgers.edu

Project Abstract: Panic in the streets as Busch Campus is over-run by these fiendish feathered felons! For far too long, these honking maniacs have had their way with our great campus, but now it is time we take back our lawns! Inspired by the brave men and women who fought in the Great Emu Wars, this project calls upon those noble and true of heart to heed the call!

Project Goals: We will construct an RC, fixed-wing aircraft, capable of militaristic defense against Busch geese. In particular, a mission profile includes the need to loiter and deploy foam darts at the enemy. Beyond this, the team must also consider additional 'wow' factors.

Project Envisioned Outcomes: Students will learn the basics behind aircraft design, static stability, and retaining stability while dropping a payload. Students will be required to identify constraints associated with desired aircraft performance.

Students Expertise:

	None	Beginner	Intermediate	Serious Hobbyist	Professional
Design			☑		
Analysis			☑		
Hand tools		☑			
Traditional Machining		☑			
CNC machining		☑			
3D printing		☑			
Welding	☑				
Wiring		☑			
Simple analog or digital electronics (e.g., resistors, capacitors, op-amps)		☑			
Microcontrollers (e.g., Arduino)		☑			
Bonding	☑				
Processing (e.g., vacuum bag, autoclave)	☑				

Software Expertise:

	None	Beginner	Intermediate	Serious Hobbyist	Professional
Matlab		☑			
Comsol	☑				
Python	☑				
Ansys		☑			
SolidWorks		☑			
Other CAD packages		☑			
Siemens NX		☑			
LabView		☑			
E-Calc	☑				
AVL	☑				
Xfoil	☑				
Machine vision program	☑				

AE PROJECT 11

RU Airborne Design/Build/Fly Competition

Advisor: Prof. Edward DeMauro

Email: ed451@soe.rutgers.edu

Project Goals: In general, the project will function in support of the RU Airborne competition. The specific goals will be published in the Fall by AIAA.

Project Envisioned Outcomes: Construct an aircraft to effectively compete in the AIAA DBF competition. The project will involve aircraft design, aerodynamics, and machining.

Students Expertise:

	None	Beginner	Intermediate	Serious Hobbyist	Professional
Design			☑		
Analysis		☑			
Hand tools			☑		
Traditional Machining			☑		
CNC machining	☑				
3D printing		☑			
Welding	☑				
Wiring			☑		
Simple analog or digital electronics (e.g., resistors, capacitors, op-amps)			☑		
Microcontrollers (e.g., Arduino)		☑			
Bonding	☑				
Processing (e.g., vacuum bag, autoclave)		☑			

Software Expertise:

	None	Beginner	Intermediate	Serious Hobbyist	Professional
Matlab		☑			
Comsol		☑			
Python	☑				
Ansys		☑			
SolidWorks		☑			
Other CAD packages		☑			
Siemens NX		☑			
LabView	☑				
E-Calc	☑				
AVL	☑				
Xfoil		☑			
Machine vision program	☑				

AE PROJECT 12

Ship Tethered Drone for Counter UAS Attacks

Advisor: Prof. F. Javier Diez

Email: diez@soe.rutgers.edu

Project Goals: Involves a TETHERED DRONE wirh multi-layered approach that includes detection, identification, tracking, and mitigation of drone threats

Project Envisioned Outcomes: Build/Test tethered drone and develop software for detecting C-UAS threats.

Students Expertise:

	None	Beginner	Intermediate	Serious Hobbyist	Professional
Design		☑			
Analysis		☑			
Hand tools		☑			
Traditional Machining		☑			
CNC machining		☑			
3D printing		☑			
Welding	☑				
Wiring		☑			
Simple analog or digital electronics (e.g., resistors, capacitors, op-amps)		☑			
Microcontrollers (e.g., Arduino)		☑			
Bonding		☑			
Processing (e.g., vacuum bag, autoclave)		☑			

Software Expertise:

	None	Beginner	Intermediate	Serious Hobbyist	Professional
Matlab		☑			
Comsol		☑			
Python					☑
Ansys		☑			
SolidWorks		☑			
Other CAD packages		☑			
Siemens NX		☑			
LabView		☑			
E-Calc		☑			
AVL		☑			
Xfoil		☑			
Machine vision program					☑

AE PROJECT 13

Design of Miniature Wind Tunnel for Measuring Pitching Moment on an Airfoil

Advisor: Prof. Doyle Knight

Email: ddknight@rutgers.edu

Project Goals:

The following tasks will be performed:
1) CAD design of wind tunnel
2) fabrication of wind tunnel using 3D printing
3) assembly of electronics
4) maintain up-to-date budget within the limit set by the Department,
5) maintain Canvas website with all results.

Project Envisioned Outcomes:

- The design specifications for the miniature wind tunnel are:
    - Measure flow velocity in m/s
    - Measure angle of attack of airfoil in deg
    - Measure aerodynamic moment about the quarter chord as function of angle of attack in Nt-m
    - View airfoil and flow around airfoil through transparent side windows (see example photo)
- A LabView VI will provide the following functions
    - Control and measurement of wind tunnel speed
    - Control and measurement of angle of attack
    - Measurement of aerodynamic moment about the quarter chord of the airfoil
    - Control smoke injection upstream of airfoil to visualize flow
    - Presentation of all data in LabView VI
    - Store data in file(s)
    - Transmit data by email
- Assembled wind tunnel must fit within locker in MERL
- Total budget \$700 per team (subject to revision)

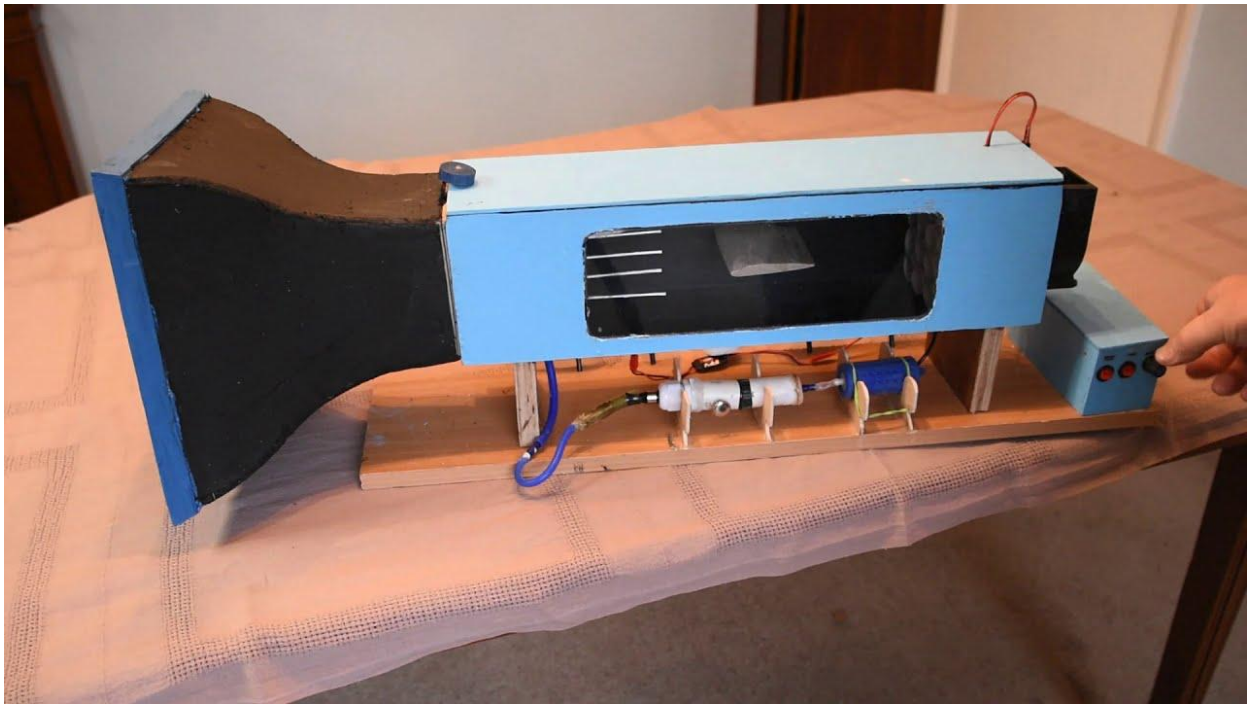
Students Expertise:

	None	Beginner	Intermediate	Serious Hobbyist	Professional
Design	☑				
Analysis			☑		
Hand tools			☑		
Traditional Machining	☑				
CNC machining	☑				
3D printing		☑			
Welding	☑				
Wiring		☑			
Simple analog or digital electronics (e.g., resistors, capacitors, op-amps)		☑			
Microcontrollers (e.g., Arduino)		☑			
Bonding		☑			
Processing (e.g., vacuum bag, autoclave)	☑				

Software Expertise:

	None	Beginner	Intermediate	Serious Hobbyist	Professional
Matlab			☑		
Comsol			☑		
Python	☑				
Ansys			☑		
SolidWorks			☑		
Other CAD packages	☑				
Siemens NX	☑				
LabView		☑			
E-Calc	☑				
AVL	☑				
Xfoil	☑				
Machine vision program	☑				

Example Photo:



AE PROJECT 14

Vibration Isolation for Aerospace Applications

Advisor: Prof. Aaron Mazzeo

Email: aaron.mazzeo@rutgers.edu

Project Goals: Characterize material properties, design and simulate frequency response, and fabricate components

Project Envisioned Outcomes: A platform and prototype for designing and fabricating vibration isolation systems to prevent damage of aerospace components

Students Expertise:

	None	Beginner	Intermediate	Serious Hobbyist	Professional
Design			☑		
Analysis			☑		
Hand tools		☑			
Traditional Machining		☑			
CNC machining	☑				
3D printing		☑			
Welding	☑				
Wiring		☑			
Simple analog or digital electronics (e.g., resistors, capacitors, op-amps)		☑			
Microcontrollers (e.g., Arduino)	☑				
Bonding	☑				
Processing (e.g., vacuum bag, autoclave)	☑				

Software Expertise:

	None	Beginner	Intermediate	Serious Hobbyist	Professional
Matlab			☑		
Comsol	☑				
Python	☑				
Ansys			☑		
SolidWorks		☑			
Other CAD packages	☑				
Siemens NX	☑				
LabView		☑			
E-Calc	☑				
AVL	☑				
Xfoil	☑				
Machine vision program	☑				

AE PROJECT 15

Continuously Variable Transmission for Propulsion and Wind Turbines

Advisor: Prof. Amin Reihani

Email: amin.reihani@rutgers.edu

Project Goals: The goal of this project is to design and fabricate an electronically-actuated continuously variable transmission (eCVT) with the potential for delivering high power at low weight for aerial propulsion as well as wind turbine applications. To maximize the energy efficiency of aerial propulsion systems (e.g. turbofan and turboprop engines), it is beneficial for the speed of the propeller or the fan of a gas turbine to be controlled independent of the turbine shaft speed. A CVT placed between the gas turbine and the propeller or the fan would achieve this goal. Similarly, in horizontal axis wind turbines, the ability of continuously varying the rotor speed as a function of wind speed would maximize the energy extraction from wind. However, electrical generators typically operate at a constant speed and do not allow continuous wide range variation of the rotor speed. A CVT placed in between the wind turbine rotor and the generator enables continuous wide range variation of the rotor speed independent of the generator speed.

Project Envisioned Outcomes: The students will design the components of an eCVT gearbox using 3D CAD software, fabricate or purchase the necessary components and assemble parts including the gears, shafts, bearings and the casing. Next, two electrical motors will be connected to the gearbox, one of which would be a high power prime mover, and the other would be a smaller motor used as an actuator. The output of the gearbox will be connected to a large propeller. The goal of the project would be to continuously vary the rotational speed of the propeller while the rotational speed of the prime mover remains constant.

Students Expertise:

	None	Beginner	Intermediate	Serious Hobbyist	Professional
Design			☑		
Analysis			☑		
Hand tools			☑		
Traditional Machining			☑		
CNC machining	☑				
3D printing			☑		
Welding	☑				
Wiring			☑		
Simple analog or digital electronics (e.g., resistors, capacitors, op-amps)				☑	
Microcontrollers (e.g., Arduino)				☑	
Bonding	☑				
Processing (e.g., vacuum bag, autoclave)	☑				

Software Expertise:

	None	Beginner	Intermediate	Serious Hobbyist	Professional
Matlab			☑		
Comsol	☑				
Python	☑				
Ansys			☑		
SolidWorks			☑		
Other CAD packages	☑				
Siemens NX	☑				
LabView		☑			
E-Calc	☑				
AVL	☑				
Xfoil	☑				
Machine vision program	☑				

AE PROJECT 16

Mini Spectrometer for Analyzing Star Spectra

Advisor: Prof. Stephen Tse

Email: sdytse@rutgers.edu

Project Goals: Students will research spectrometer design and components and 3-D print a spectrometer housing for selected optics and detector.

Project Envisioned Outcomes: Spectra for well-known stars can be compared to or calibrated those in the published literature. The spectrometer should be able to be attached to a telescope (or microscope).

Students Expertise:

	None	Beginner	Intermediate	Serious Hobbyist	Professional
Design			☑		
Analysis			☑		
Hand tools			☑		
Traditional Machining			☑		
CNC machining			☑		
3D printing			☑		
Welding	☑				
Wiring			☑		
Simple analog or digital electronics (e.g., resistors, capacitors, op-amps)			☑		
Microcontrollers (e.g., Arduino)			☑		
Bonding		☑			
Processing (e.g., vacuum bag, autoclave)		☑			

Software Expertise:

	None	Beginner	Intermediate	Serious Hobbyist	Professional
Matlab			☑		
Comsol			☑		
Python			☑		
Ansys			☑		
SolidWorks			☑		
Other CAD packages			☑		
Siemens NX	☑				
LabView			☑		
E-Calc		☑			
AVL		☑			
Xfoil		☑			
Machine vision program		☑			

AE PROJECT 17

Design of Strong and Lightweight Spherical Pressure Vessel Using Carbon Fibers and Epoxy Resin

Advisor: Prof. George Weng

Email: gjweng@rutgers.edu

Project Goals: To build a light-weight composite spherical pressure vessel that can sustain high pressure without failure.

Project Envisioned Outcomes: A hardware composite spherical pressure vessel.

Students Expertise:

	None	Beginner	Intermediate	Serious Hobbyist	Professional
Design		☑			
Analysis		☑			
Hand tools		☑			
Traditional Machining		☑			
CNC machining		☑			
3D printing		☑			
Welding		☑			
Wiring		☑			
Simple analog or digital electronics (e.g., resistors, capacitors, op-amps)		☑			
Microcontrollers (e.g., Arduino)		☑			
Bonding		☑			
Processing (e.g., vacuum bag, autoclave)		☑			

Software Expertise:

	None	Beginner	Intermediate	Serious Hobbyist	Professional
Matlab			☑		
Comsol	☑				
Python	☑				
Ansys	☑				
SolidWorks	☑				
Other CAD packages	☑				
Siemens NX	☑				
LabView	☑				
E-Calc	☑				
AVL	☑				
Xfoil	☑				
Machine vision program	☑				