College of Engineering, Computer science, & Technology

Capstone Senior Design Program Presents

Electrical Engineering, Mechanical Engineering, and Engineering Technology Programs

2025-2025 Cohort Project Descriptions

SCHEDULE

TIME	PROJECT
9:00 am - 9:30 am	Electric Vehicle Design (Mechanical)
9:30 am - 10:00 am	Electric Vehicle Design (Thermal)
10:00 am - 10:30 am	Electric Vehicle Design (Electrical)
10:30 am - 11:00 am	3-D Printed Glider (Team A)
11:00 am - 11:30 am	3-D Printed Glider (Team B)
11:30 am - 12:00 pm	3-D Printed Glider (Team C)
12:00 pm - 1:00 pm	Break
1:00 pm - 1:30 pm	PLA Recycling Team
1:30 pm - 2:30 pm	Design and Build a Roller Coaster
2:30 pm - 3:30 pm	Design and Build an Industrial Automation Machine

PROJECTS & PRESENTATIONS

Electric Vehicle Design (Mechanical/Thermal/Electrical Teams)

The senior design teams were tasked with designing and testing a battery enclosure for a Ram ProMaster Electric Vehicle. They are working along with the Cal State LA Battery Workforce

Challenge (BWC) Team, consisting of ~30 students from all ECST majors, which is tasked with designing and implementing a battery pack for a full-scale Stellantis vehicle as part of a nationwide competition.

Students - Mechanical: Elias Perales, Frederick Jimenez, Hyung Kim, Luis Arias, Luisa Bautista Lopez, Ruben Ybarra, Sergio Jimenez-Ceron

Advisor: **J. Chris Bachman, Ph.D.**

Students - Thermal: Branden Medina, Heber Garcia, Henry Solares, Juan Perez-Sias, Larry Navarro Garcia

Advisor: **J. Chris Bachman, Ph.D.**

Students - Electrical: Carlos Ortiz, Jaime Valle-Arce, Luis Garcia, Pita Vaouli, Thomas Thomas

Advisor: **Y. Curtis Wang, Ph.D.**

3D-Printed Glider Teams (Teams A, B, C)

The teams were assigned to design and fabricate a catapult-launchable glider employing additive manufacturing techniques. The design specifications require the glider to possess aerodynamic efficiency and minimal structural weight to maximize flight endurance, as well as a morphing structural mechanism capable of sustaining the dynamic loads and g-forces induced during catapult launch.

Students Team A: Alan Velazco, Anthony Perez, Aryav Balia, Dilio Matias, Edgar Quintero

Students Team B: Branden Medina, Heber Garcia, Henry Solares, Juan Perez-Sias, Larry Navarro Garcia

Students Team C: Edwin Banuelos, Julián Echevarría, Raúl Méndez

Advisor: **Sangbum Choi, Professor**

PLA Recycling Machine

The team was tasked to create a functional system that takes used PLA waste, processes it into reusable filament, and ensures high-quality output. The entire workflow involves multiple

stages, which can be split into two teams for effective execution.

Students: Alexis Rayos, Alfredo Nino-Urbina, Bryant Lopez, David Martinez, Jesus Diaz, Thanh Vu Nguyen

Advisor: **Ankit Gupta, Ph.D.**

Design and Build a Roller Coaster

The team was assigned to create a Wild Mouse roller coaster model. They needed to study track and vehicle design, control and safety systems using a real industrial PLC, sensors, brakes, and operator control panels, then apply their engineering skills to build a functional model.

Students: Alfred De La Cruz, Algever Garcia, Catherine Sanchez, Jaycee Flores, Jonathan Escobar-Hernández, Joseph Martinez, Lea Rolland, Luis Lozano, Matthew Caldera, Nancy Sarabia

Advisor: **Kurt Sawitskas, Professor**

Design and Build an Industrial Automation Machine

The team was tasked with creating a machine to demonstrate an industrial or factory process. The project would include a conveyor system, scanning and sorting capabilities, and other features, using real industrial process and control equipment such as an industrial PLC, sensors, motors, and operator control panels.

Students: Alex Cayetano Colon, Arabo Gholian, Hermela Emagnaw, Jaime Diaz-Moreno, Jesus Estrada, Mitchell Perez, Ryan Hong, Walter Quintanilla, Xochitl Vara

Advisor: **Kurt Sawitskas, Professor**
