E-Gen: Project Electrogenesis

FACULTY ADVISOR: Dr. Joonwan Kim

Project Electro-Genesis wants to design and produce maskless lithography machine to pattern high resolution images on semiconductors. Then, using the machine, manufacture a resistor, diode, and transistor along with receipt the processes and procedures. In response to the increasing global demand for semiconductor components, this work aims to establish a foundation for in-house semiconductor production of high-end semiconductors.

FENNEC: Center of Gravity Estimation using Neural Networks for Rotary-Wing Aircraft

FACULTY ADVISOR: Dr. Andrew Davis

Rotary-wing aircraft would benefit from the ability to accurately and reliably determine the location of the 3D Center of Gravity (CG). Aircraft capability is reduced when a safe control setting or flight envelope is selected to account for the CG uncertainty. This research project will use flight data such as actuator inputs, measured properties, and aircraft response to create a machine learning model to predict real-time CG estimates. Flight tests, experiment design, analytical methods, and machine learning will be combined to answer the posed research questions.

FLO: Fluid Lab Overhaul

FACULTY ADVISOR: Prof. John Tixier

A fluids lab apparatus from a previous Senior Design team, which includes Bernoulli and Venturi, Roughness and Headloss, and Hydrostatic modules, serves as the baseline for the project. The goal is to refine the inherited modules and to create new ones in order to demonstrate various fluids principles. With the addition of Laminar and Turbulent Flow and Pump Characterization modules, the team will be able to prepare fluids labs and demonstrations to help LeTourneau students better understand the physical properties and behaviors of fluids.

2025 - 2026 Senior Design Projects

Lazy Rivers

Lazy Rivers seeks to advance the understanding of lazy river hydraulics and aid in providing a design tool to assist field engineers in the aquatic industry. This will be developed and validated by using laboratory experimentation as well as measurement and modeling of full-scale lazy rivers. Our findings will be shared with our primary client, Aqueous Engineering in Tyler, TX, as well as prepared for dissemination in journal papers and conference presentations.
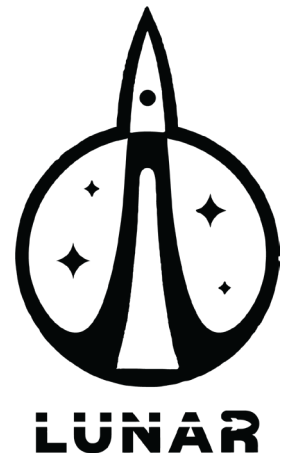
FACULTY ADVISOR: Dr. Darryl Low

LUNAR: LeTourneau University Nexus for Amateur Rocketry

LUNAR is competing for the 2nd Annual Lone Star Cup, a rocketry competition founded and run by Texas university students. LUNAR is designing and launching a two-stage rocket to deploy a glider at 10,000 feet and collect atmospheric readings, as well as debut a new system for live, continuous GPS tracking throughout the entire rocket flight.

FACULTY ADVISOR: Dr. Chad File

LCR: LeTourneau Competitive Robotics Team

The LeTourneau Competitive Robotics Team will design, prototype, test, and attend competition with two VEXU robots. The team's goal is to ensure the two robots are structurally sound, maneuverable, and perform the "VEXU Pushback" game within the parameters given. Success will be measured by the quality of the two robots produced by the team, ensuring that both robots follow the provided rules and standards within the handbook. Success will also be recognized with the participation of hosting 3 robotics tournaments for high school divisions, and cultivating a foundation for the growing VEXU support at LeTU—paving the way for future teams.

FACULTY ADVISOR: Prof. Norm Reese

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2025 - 2026 Senior Design Projects

LETREP26
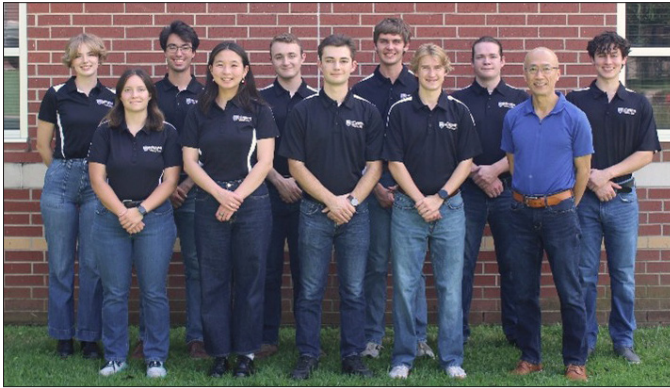
FACULTY ADVISOR: Dr. Ko Sasaki

LETREP26 is looking for a correlation between the unreliable and difficult to use electromyography (EMG) sensor, which records the electric signals created by the muscles, and the simple force sensor. The team is specifically focusing on the EMG of the bicep and the force created by the arm during a reflexed movement of stroke patients, who often suffer from spastic movements. The team is also creating a rehabilitation machine meant to be installed in homes with the purpose of easy use and accessibility for the stroke patients to allow more frequent rehab sessions.

On-PAR: Putting Aid Robot
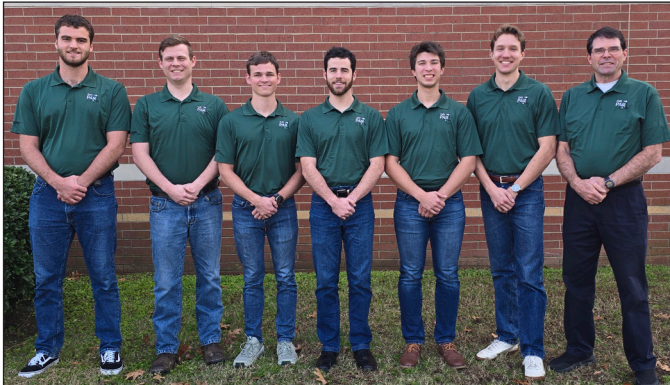
FACULTY ADVISOR: Prof. John Tixier

The On-PAR project aims to design and prototype a putting performance assessment device for golfers. The device will optically record key putting session data, including ball speed measurement, ball grouping analysis, average distance from hole, and multi-user session summaries, and report the processed data to an integrated mobile app for analysis by players or coaches.

SAE BAJA: Renegade Racing

FACULTY ADVISOR: Prof. Jeff Johnson

Renegade Racing will design, fabricate, and test a single-seat, four-wheel drive, off-road vehicle in accordance with the extensive SAE rulebook. They will compete against over 100 universities at the international Baja SAE competition in Rochester, New York in June 2026. The team aims to exceed the performance limitations of previous vehicles with a new, refined design. SAE judges will evaluate the vehicle and the team, in design, cost (including the ability to attract investment interest through sponsorship), acceleration, hill-climbing or tractor-pull, maneuverability, suspension and endurance.

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2025 - 2026 Senior Design Projects

TARMAC: Team Airport Renovation: MEP, Architecture, Civil

FACULTY ADVISOR: Dr. Hanwan Jiang

TARMAC will deliver a comprehensive design plan set to GGG Airport for its planned expansion along the northeast side. The scope includes complete utility design for water, stormwater, sewer drainage, and electrical power systems to support the increased capacity requirements. In addition, the team will provide site development, structural, architectural, and MEP design for two types of aircraft hangars—one measuring 80' x 80' and the other 100' x 120'—to be constructed during the initial phase of the development.

VMP: Verso Motor Project

FACULTY ADVISOR: Dr. Joonwan Kim

Whether in desk fans, cars, or space stations, electric motors are an essential part of nearly every modern machine. The Verso Motor Project (VMP) is working with startup company MμZ Motion to help define the design for the Verso Motor, a lightweight, high-torque, electric motor. Students are doing this by building a test fixture to test materials and laminations for Foucault's Currents, collecting and interpreting all data to improve efficiency, building a motor test bed, and fabricating and testing a prototype for the Verso Motor. Students are working with industry professionals and gaining real-world experiences in security and documentation.

WAAM: Wire Arc Additive Manufacturing

FACULTY ADVISOR: Dr. Tao Dai

WAAM is an emerging metal 3D printing technology to produce complex metallic structures with higher efficiency and lower cost than traditional manufacturing methods like casting or machining. This project is to initiate the research and development of WAAM 3D printing technology at LeTourneau University. 3D printed walls will be built using two ferrous alloys and two welding systems for microstructure characterization and mechanical property testing. Complex shaped structures will be built using a robotic welding system. The results of this project will be presented at the FabTech conference 2026.

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