



**ENGINEERING**

**SENIOR  
DESIGN  
SYMPOSIUM**

**MAY 4, 2017**

**UNIVERSITY EVENT CENTER**

**LAMAR UNIVERSITY**

## 1. Crude Expansion

Group: Melei Victorine A Akpa, Majdi Alharbi, Almuhammad Basuni, Jesus Mckinnon, Luis Villa, Daniel Wilkinson

Description: 325,000 BBL/DAY Crude Expansion Project including crude still, vacuum tower, and reformer area equipment

## 2. Ethanol Fermentation, Distillation and Recovery

Leader: Aaron Gauthier

Group: Micah Murdock, Chad Miller, Chris Cheek, Chase Pinder

Description: Making beverage, fuel and industrial ethanol

## 3. Crude Expansion

Leader: Shannon Kruger

Group: Aishah Alfarhan, Progga Chirontoni, Ryan Null, William Shipp IV, Sean Treese

Description: 325,000 BBL/DAY Crude Expansion Project including crude still, vacuum tower, and reformer area equipment

## 4. Roku Petrol Crude Expansion

Leader: Alaina Cole

Group: Donald Dobson, Erin May, Austin Ross, Erika Salinas, Artur Tkachev

Description: Design of crude refinery unit expansion

## 5. Advanced Enterprises

Leader: Joanna Chavez

Group: Andrew Allgeyer, Madison Hardy, Manisha Patel, Ashley Trahan, Kyle Zygula

Description: Simulating crude expansion project

## 6. BMS-CJS Expansion Team

Leader: William Kelly

Group: Joseph Amoabeng, Cole Clabough, Tuyet Nguyen, Maxy Nwosu, Sabrina Smith

Description: Designing a 325 MBD Crude and Reformer area expansion

## 7. Crude Expansion

Group: Abed Aicha, Mohanad Alhamdan, Connor McBride, Roerto Obregon, Enrique Salazar, Samuel Stratton

Description: 325,000 BBL/DAY Crude Expansion Project including crude still, vacuum tower, and reformer area equipment

## 8. Crude Expansion and Optimization

Leader: Rachel Thompson

Group: Trenton Allen, Steven Beagle, Ismael Ochoa, Ryan Trahan, Shreah Whitlock

Description: Design of crude tower distillation and naphtha processing complex

## Civil & Environmental

### 9. Modern Round About

Leader: Joanne Scarf

Group: Ahmad Alzahrani, Madison Floyd, Diego Ordonez, Tyler Skinner

Description: A circulatory roadway will be designed in a rural area in order to decrease traffic congestion and increase safety on the existing highway

### 10. Erosion Mitigation at FM 787 and the Trinity River

Leader: Nicholas Lutz

Group: Zachary Ferguson, Travis McCawley, James Horne, Eric McGuire, Matthew Shelton

Description: The purpose of this project is to mitigate erosion occurring at FM787 and the Trinity River

### 11. Development of an Optimized Compressed Earth Block for the Southeast Texas Area

Leader: Molly Ross

Group: Mariam Abdelwahab, Kyle Edwards, Johnita Goodman, Julie Hammond, Brandon Watkins, Kyle Edwards

Description: Compressed Earth Blocks (CEB), will be designed, manufactured and tested using various stabilizers in order to develop a sustainable building material applicable to the Southeast Texas area

### 12. The Meadows Subdivision

Leader: Kassie Kolander

Group: Holden McCollum, Bernice Villapando, Cameron Meyer, Clint Dailey, Colin King, Eric Wooten

Description: To expand the design of a current subdivision as well as determine solutions for adequate drainage so as to accommodate future development

## Electrical Engineering

### 13. Multistage Lead Acid Battery Charger

Leader: Nicholas Davis

Group: Cody Allen, Daniel Nguyen

Description: Design and build a system which can safely charge and maintain any 12V lead acid battery

### 14. RFID Controlled Electronic Door Lock

Leader: Jonathan Taylor

Group: Nicholas Carter

Description: Design an RFID activated electronic door lock mountable to any household door for both security and convenience

### 15. Arduino Pill Counter

Leader: Levi Boullion

Group: Caleb Buxie, Omar Enriquez, John Pickren

Description: To create an external module that can count and sort objects based on a list of pre-selected criteria

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16. Touch Screen for Ophelia

Leader: Mason England

Group: Megan Kemp, Abdullah Al Issa

Description: Create an augmentative and alternative communication (AAC) device for Ophelia's wheelchair

17. Liquid Release System

Leader: Paul Falgout

Group: Darren Easley, Saleh Al Olaimi

Description: Create a proof of concept demonstrating a low-cost solution for level control in natural gas scrubbers.

18. Spherical Robot

Leader: Jesus Diaz

Group: Jordan Johnson, Angel Rodriguez

Description: Create a robotic sphere that is able to move in all directions with a dynamic feedback system to adjust its balance

19. Electronic Tray with Communications

Leader: Mohammed Alqattan

Group: Hassan Alzaki, Gabriel Espinosa

Description: Develop a speech application that incorporates a touch screen integrated into a wheelchair

20. Fingerprint Recognition Operated Door Opener

Leader: Ivan Barragan

Group: Taylor Bellard, Chigozirim Ike

Description: Incorporate a low cost, user-friendly fingerprint recognition module to open a vehicle door

21. Mechanical Cow

Leader: Trenton Moore

Group: Ethan Ellender, James Struble

Description: Design and construct a remote-controlled cow that utilizes a cable, a pulley system and a motor

22. Near Infra-Red Spectroscopy Designed with Digital Cameras

Leader: Robert Perry

Group: Conan Semien, Steven Nguyen

Description: Design and build a functional near infra-red (FNIR) brain imaging system with digital cameras

23. Automated Home System

Leader: Denys Wade

Group: Mark Fanos, Megan Mahana

Description: Develop an automated home system that sends mobile notifications, uses timers and provides mobile remote control

24. SmartKnock

Leader: Patrick Taggart

Group: Travis Moore, Justin Wilkinson

Description: Create a lock that is more useful and convenient than digging keys out of a pocket or a purse



25. Lamar Array of Microphones for Deciphering Audio (LAMDA)

Leader: Lukas Moravits

Group: Mitchell Davis, Jesse Wells

Description: Create a proof of concept demonstrating a microphone array capable of both hands-free communication and monitoring

## Industrial Engineering

26. Cogbill Construction-Cost Estimation

Leader: Jessica Rowell

Group: Abdullah Alhabidi

Description: Implementing cost estimation solutions for Cogbill Construction's fabrication process. We focused on the plate roller process, collected time studies and analyzed our findings. We developed a formula based on statistics that can project the time needed to roll plate based on the dimensions of the product. We designed a calculator that will allow Cogbill Construction to input dimensions and find the time needed in this process for their cost estimation purposes. Researched professional software programs that would be beneficial to the company to give them more options for their cost estimation needs

27. Water Clarifying System Automation at XYZ Chemical Plant

Leader: Kaitlin Wolford

Description: This project will improve the automation and reliability of a water clarifying system by implementing new instrumentation

28. Facility Layout Project

Leader: Saleh Alsenani

Group: Mahdi Hejazi, Hashim Almaghrai

Description: Focusing on Cogbill Company in need of a layout redesign. We will focus on reducing the traveling distance from each department to another department. By reducing the traveling distance, the traveling time will be reduced, and the cost of material handling will be reduced as well

29. Port of Beaumont

Leader: Veronica Ochoa

Group: Kaley Sanford, Daliwealth Chou, Erica Borel

Description: Designed a cargo location assignment system for the Port of Beaumont. Currently, there is no system for cargo allocation so with the use of an optimization mode, a simulation and ArcGIS we have created a system for them

30. Routing Optimization for FedEx

Leader: Nadiya Kulibaba

Group: Nikita Lis, Faith Baha Omeroglu

Description: Develop alternatives for routing optimization for a local FedEx Contractor who is lacking everyday scheduling for drivers. The company is facing a problem of misdelivered packages which our team is currently working on



### 31. Signal Level Analysis

Leader: William Watson

Description: Four high volume parts of the Signal Level Control line have increased in production time by an average of one hour. This project analyses the causes of increase, and makes recommendations for decrease of time using industrial engineering tools that lead to a projected annual savings of \$300,000

### 32. Alpha Rescue

Leader: Nancedalia Duarte

Group: Jarrod McFee, Samuel Walker, Anas Subki

Description: Alpha Rescue is an ambulance company based out of Silsbee Texas. We were given the tasks of: Organizing their storage room, developing a more efficient process for restocking the ambulances, creating a system to know when/how much inventory to order and submitting a preventative maintenance program for the vehicles

### 33. Designing a Windshield Manufacturing Facility

Leader: Rocio Hart

Description: Design a replacement windshield manufacturing facility that has the ability to produce a minimum of 5,000 and maximum of 10,000 windshields per month. Choose machinery that will be used, design an efficient layout for the facility, complete a financial analysis and personnel requirements for employees

### 34. Designing a Windshield Manufacturing Facility

Leader: Mohammed Rahad Hossain

Description: Design a windshield manufacturing facility, manufacturing equipment, support equipment, personnel requirements, and manufacturing support areas. The plant should be able to produce a minimum of 5000 windshields per month and up to 10,000. The product should be ready to be sold as a replacement parts in the most common brands in North America

## Mechanical Engineering

### 35. TSGC-11 Alternative Sanitation Methods for Long Duration Space Missions

Leader: David Michaelsen

Group: Federico Gasbarri, John Gust, Chris Stelse, Wesley Wilson

Description: The Lamar Launderers have developed a lightweight, inexpensive and energy-efficient method for sanitizing clothing for repeated use on long-term space missions

### 36. SAE Mini Baja

Leader: Tyler Downs

Group: Zhebeau Beasley, Adam Fadhli-Theis, Blake Judice, Alex Spencer, Kimberly West, Gabrielle Haigler, Alec Johnson, Felicia Saucedo, William Newsom, William Schnedier, CJ Benson, Caylan Bailey

Description: Design, build, and test an all-terrain vehicle for SAE Baja Collegiate Competition

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37. Mars Sample Return System

Leader: Tommy Wendling

Group: Luke McCall, Alan Godinez, Travis Miller, Matthew Hunt

Description: The goal was to design a device that could efficiently pick up and contain sample caches that would be on the surface of Mars

38. EcoCardinals Urban Concept Car

Leader: Justin Amedee

Group: Mary Bergman, Bryce Boyette, Richard Bradley, Robert Brush, Steven Do, Emmanuel Flores, Aaron Lavergne, Andres Torres, Edgar Trevino, Brian Turner, Holly Washburn, Kamdon Weaver

Description: To design and build an economical diesel powered vehicle that includes street legal components such as headlights, taillights, mirrors and windshield wipers

39. Shell Eco Marathon Prototype Design

Leader: Abdullah Altoom

Group: Mario Guzman, Abdulmuhsen Alnajjar, Anthony Malish, Devin Allen, Diego Valasquez, Humberto Zepeda-Lopez, Jeandre Hoogenboezem, Noah Roberson

Description: Design, build, and test a highly fuel efficient vehicle for Shell EcoMarathon Prototype Diesel Competition

40. Theo Jansen Walking Machine

Leader: Evelyn Williams

Group: Israel Pipkinst

Description: Design, build, and test a walking robot based on Theo Jansen mechanism

41. MATE ROV

Leader: Mary Ray

Group: Koby Couron, Christian Dao, Ryan Fregia, Quade Robertson, Rashaan Webster, Brent Janak, Brannon Beaton

Description: Designed an underwater remotely operated vehicle that will be required to complete four task within fifteen minutes at competition. Each task is different and therefore the ROV will be versatile and build within required boundaries to complete each task

42. Human Powered Vehicle, Team 2

Leader: Logan Rhame

Group: Manuel Medina, Logan Rhame, Chris Sweat, Connor Allen, Bryce Whaley, Paul Hillyard

Description: Design an aerodynamic efficient, high speed, impact resistant human powered vehicle through the use of scientific principles

43. Human Powered Vehicle, Team 1

Leader: Matthew Kelm

Group: Justin Doolittle, Jose Quarta, Matt Broussard, Garrett Glatfelter, Brian Stafford

Description: Build a recumbent style bicycle

44. Electronic Cooling System

Leader: Christopher Alger

Group: Justin Ho, Amanda Xu, Jack Zhao

Description: Observation and measurement of various electronic cooling system

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