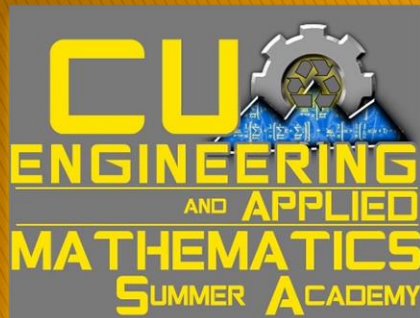




2017 Cameron University Engineering and Applied Mathematics Summer Academy:

*Student Enrichment and Engagement by the
Engineering Design Process*



Sheila E. Youngblood, Engineering
Irene Corriette, Mathematics
Tyler Bishop, Engineering Student

Academy Primary Purpose

To provide high school students with enrichment programs which will excite their interest in engineering and mathematics and attract them to engineering and mathematics related careers.



Academy Objectives

1. Provide an intensive engineering and applied mathematics experience in a college setting where students utilize equipment not typically found in an Oklahoma high school classroom.
2. Introduce students to local industries that employ engineering and applied mathematicians and encourage students to consider STEM careers.
3. To excite students about principles of engineering and mathematics and explore how they will impact research and technology in the future.
4. Empower the student to share their experience with their schools.
5. Increase the percentage of students that attend college and major in STEM related areas and increase the number of underrepresented and female students in STEM careers.

2017 Activities

1. Students used Vernier laboratory equipment, the Vernier windmill, and a small scale wind tunnel during learning sessions and while designing their projects.
2. Cotton Electric Co-op and Western Farmers Electric Cooperative (WFEC) representatives spoke to our students about wind power and career planning.
3. Field trip to Norman, Oklahoma to Bergey Wind Power.
4. Students are able to take their designs home and are provided with the protocols to build additional prototypes.
5. The selection process targets students from underrepresented groups.
6. Academy end presentations allow student to show their achievements and provides a sense of accomplishment and pride.

The Academy Participants, Faculty, and Staff

Who: 20 highly motivated high school students

Where: Cameron University

When: June 24–30, 2017

Faculty:

- ▶ 2 full-time CU faculty, 1 part-time CU faculty, 1 high school curriculum specialist

College student staff:

- ▶ 1 activities director, 2 dorm counselors, 2 laboratory workers

High school mentors:

- ▶ 4 high school junior counselors

2017 Participant Demographics

- ▶ 40 applicants in 2016, 80 applicants in 2017
- ▶ 24 9th to 12th grade students selected
- ▶ 16 high schools represented, 8 were rural/low income institutions
- ▶ 12 male, 12 female
- ▶ 25% first generation college students
- ▶ 21% Native American
- ▶ 12.5% African American
- ▶ 8.3% Asian
- ▶ 8.3% Hispanic
- ▶ 50% Caucasian

Academy Schedule

- ▶ Day 1 – Check In, Get Acquainted Games, Self-Defense Interactive Training, CU welcome.

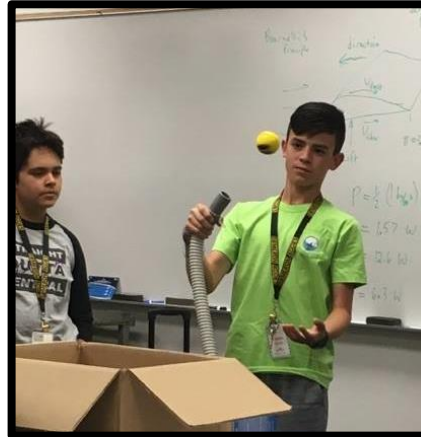


- ▶ Day 2 – Travel to Stillwater to gain soft skills at the OSU Outdoor Adventure Challenge Course.



Academy Schedule

- ▶ Day 3 and 4 – 2 Learning sessions, detailing the engineering design process, wind energy and power.

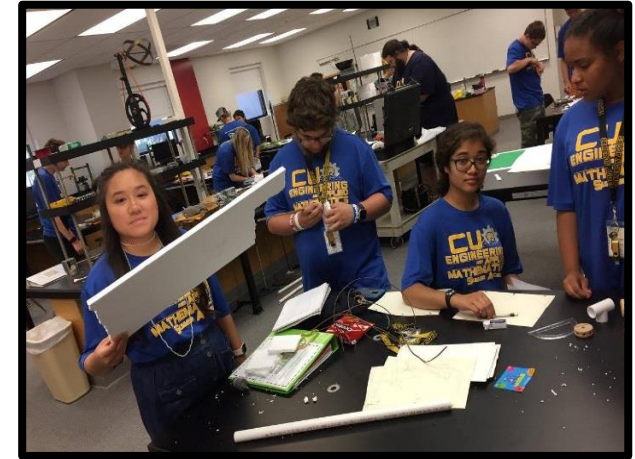
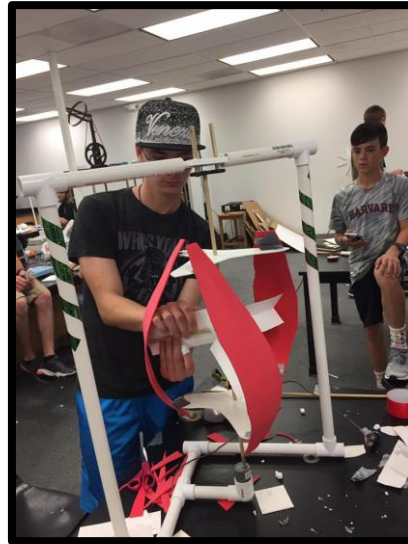
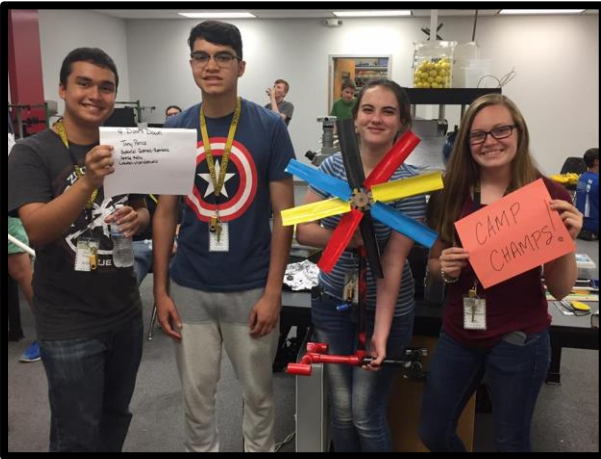


- ▶ Day 5 – Field trip to wind farm, and afternoon session: understanding the engineering design process, initial team designs.

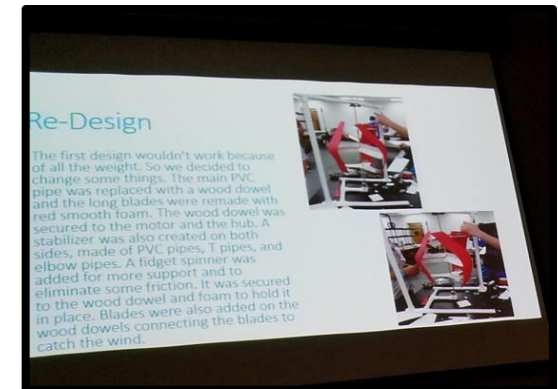


Academy Schedule

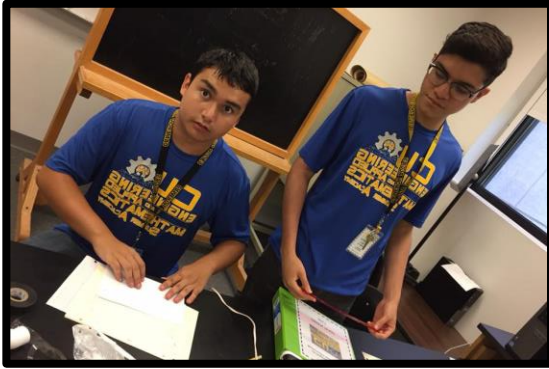
- ▶ Day 6 – Revise team designs, test, and compete.



- ▶ Day 7 – Student presentations, Academy Jeopardy, catered lunch, Check out.



Academy Moments...



Student Comments

- ▶ Overall, this camp helped me develop my engineering skills and helped me make more friends. I enjoyed all the activities, especially the sports and lasertag. The lessons on the windmill were very informative and I would want to come back next year.
- ▶ I loved the camp overall. All the activities and learning session kept me engaged and interested.
- ▶ I thoroughly enjoyed the academy. I was able to learn things about myself and working with others educationally and socially. I would genuinely be interested as returning as a junior counselor! Thank you so much!
- ▶ I really enjoyed being at this camp. The instructors were really good at teaching us what we needed to know.

Student Survey

- ▶ 100% enjoyed the classroom instruction, the quality of the faculty, and the experience overall.
- ▶ 95% enjoyed the CU food, the course activities, and the recreational activities.
- ▶ 90% enjoyed the project and competition.
- ▶ 85% enjoyed the field trips and guest speakers.

Student Participants Served as Small Group Leaders at It's MathE



Questions....

Contact:

Sheila Youngblood

syoungbl@cameron.edu

580-736-5959

Irene Corriette

icorriet@cameron.edu

580-581-2909

Or go to

www.cameron.edu/engineeringandmath

FREE
to all
participants

CU
ENGINEERING
AND **APPLIED**
MATHEMATICS
SUMMER **A**CADEMY

June
10th to 15th
2018

Open to all 9th—12th Grade Students in Oklahoma

The 2018 Summer Academy is a free, 6 day, 5 night enrichment program held at Cameron University. This year students will experiment with portable clean water systems and analyze their impact on clean water and green engineering.

APPLY HERE by April 30 2018:

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