

## Utah State University

### A Team Corner

- Engineering Camp
- Biotechnology Summer Academy
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- Data Camp
- Engineering State

- Get ready for National GEAR UP week, coming up on September 18th!
- For Site Coordinators: Please download resources for planning at this link:

<https://utahstars.usu.edu/resources/gear-up-week-2017-resources>

## Engineering Camp

For two weeks in July, USU STARS! GEAR UP hosted Engineering Camp, where students were able to study and research water engineering and watershed sciences. Forty-two GEAR UP scholars worked with USU college students, professors, and engineers to perform various experiments throughout Cache Valley. At the beginning of the week, students were placed in separate groups, which were led by science teachers from participating GEAR UP schools. In their groups, students were responsible for creating posters about the data that they collected throughout the week. Using all of the information they gathered, the groups posed experimental questions about water systems. At the end of the week, students presented their questions and hypothesized theories to the Associate Dean of Engineering, Dr. V. Dean Adams.

Students spent a portion of their time in a lab, learning about the importance of water quality, natural versus



*Top Left: Camille H. carefully measures turbidity of Cache Valley water.  
Top Right: Ms. Mauro, a GEAR UP teacher watches Alex F. filter water using rocks and grains of sand.*

*Above: Engineering Camp scholars pose in front of the Square Lakes at the Logan Water Treatment Center.*

urban watersheds, and the consequences of depleted resources. Scholars were not confined to experiments in a lab for the entire week, they were also able to take their knowledge to the field. The students ventured into Logan Canyon, where they spent time with Utah State's Watershed Sciences Team collecting data. Later that day, students visited multiple points in the Logan River, where they conducted experiments to gather more

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research for their presentations.

Apart from their educational experience, students also enjoyed time with their peers exploring summer activities in Logan. Students built connections with one another as many of them tried canoeing and paddleboarding for the first time in Logan's First Dam. Students spent an evening building and launching rockets made out of printing paper and masking tape, while teachers attended professional development seminars.

Throughout the week, students not only developed scientific knowledge, but also practiced communication and team work with their fellow classmates that fostered a friendly environment for the GEAR UP scholars. Presenters of Engineering Camp, Drs. Ryan Dupont, Nancy Mesner, Max Longhurst, and Kurt Becker designed the camp to revolve around group work, which is an essential part of scientific education. "The group work for data collection and analysis is designed to foster this collaboration and team work that is essential in science and



Engineering Camp participants smile after a week full of experiential learning, hard work, and fun!

engineering," said Dr. Dupont. Engineering Camp fostered a professional, yet friendly environment where students developed their scientific and communicative talents that can be useful tools in their years of school to come.

## Biotechnology Summer Academy



GEAR UP scholars enjoy working in the lab at the annual Biotechnology Summer Academy.

For nearly 17 years, Utah State has held its annual Biotechnological Summer Academy (BSA), a week full of learning and exposure to the numerous career opportunities in biotechnology. A few of USU STARS! GEAR UP's students from Logan High School had the wonderful opportunity to attend the Biotechnology Summer Academy in Logan. Here, students were able to interact with experienced scientists and professors to learn more about the biotechnological field. Four lucky students from Logan High School spent the week doing various activities, which included communication workshops, lectures and demonstrations, mentoring and research, laboratory training, and field trips. The students even had time to bowl, miniature golf and enjoy some of Utah State's favorite treat: Aggie Ice Cream. At the beginning of the week, students were assigned a research project to focus on during their time at the academy. Each student had a mentor supervising their projects, as well as giving guidance for those who needed help. "Although science labs done in class do a good job of demonstrating scientific principles, students don't get a good idea of what it's really like to work in science," says Aaron Thomas, Director of BSA, "This program gives them that."



## Transition Camp



Top: Students work together in a team effort in a lively game of tug-a-war. Left: Kave N. transports soil around the Conservation Corps Community Garden during a service project. Right: Justice B. high fives his course instructor after overcoming his fear of climbing a 50 ft. rock wall!

GEAR UP scholars from across Utah and Nevada gathered at Utah State University this past June, where soon-to-be high school freshmen participated in an enriching three day experience. Transition Camp focused on empowering scholars with tools to recognize and optimize their full potential. During camp, students were split into small groups, each of which were led by college students who were able answer any questions the students had about college, as well as discuss future plans.

Over the course of the three days, the students attended various workshops that included topics like "Binder Organization," "Social Media & Anxiety," and "Asking for Help." The students also had the opportunity to listen to Tony Flores, a guest speaker who told his inspiring

story that left students feeling excited about their future.

The next day, scholars headed over to the USU Challenge Course, where they were able to experience "low elements" that featured activities at ground level, as well as "high elements" which challenged students to climb 50 feet from the ground! Each activity is designed to help individuals work together, communicate more effectively, think "outside the box," build stronger friendships, practice problem solving skills, and gain self-confidence. During the Challenge Course, many scholars overcame personal fears by realizing their potential. Students also had the opportunity to contribute to the community by participating in service projects. Half of the students created origami cranes in honor of Sadako Sasaki, a victim of the Hiroshima atomic bombing. The other half broke out the shovels and rakes at the Conservation Corps Community Garden in Logan, Utah, to help preserve and manage the growing produce, which is donated to those less fortunate.

Students finished up their final night with watching and participating in "Aggies around the World," a cultural event paying tribute to many cultures across the globe. Students and group leaders sang, danced, and played games making for a memorable closing evening at USU.

Transition Camp helped develop and enhance each student's academic skills and created a fun environment to try new activities and meet new friends. Many of the students were exposed to new experiences that challenged their skills. "Whether it was from making new friends, climbing a super tall rock wall, or learning teamwork in the get-to-know-you games, [the students] found out they could do hard things and do them well," said Darcie Christensen, a Transition Camp group leader. "New experiences are all about gaining the confidence that if you put your mind to something, you can do it!"



A GEAR UP ninth-grade scholar reflects a certain superhero as he finds himself hanging upside down during one of the activities at the USU Challenge Course.



## App Camp

USU STARS! GEAR UP hosted its second annual APP Camp held on the Utah State University campus. This weeklong camp featured 22 female GEAR UP scholars, each of whom are preparing to enter the 12th grade. Throughout the week, students spent their days in the computer lab, learning how to develop applications using JavaScript, a computer programming language used to create complex applications. Each student was able to use this dynamic language to design their very own applications, which they tested on their cell phones.

Beyond their academic learning, students also enjoyed activities such as a “Just Dance” party, singing around the fire pit, and a movie night featuring *Hidden Figures*, an inspiring true story about female African-American mathematicians who played crucial roles in NASA’s unwavering success. During the week, students combined both their technological and artistic skills to participate in circuit sewing. Each day, students took time to meticulously sew small light circuits into sweatshirts to create phenomenal designs.

Throughout APP Camp, these GEAR UP scholars were able to train in App coding development, learn pragmatic technological skills, and build lasting friendships.



Top: Mikayla and Elaina focus on developing their complex computer applications, a college level skill.



Bottom (L to R): Trisha, Eunice, Hope, and Vy bond over circuit sewing, each creating a unique design.

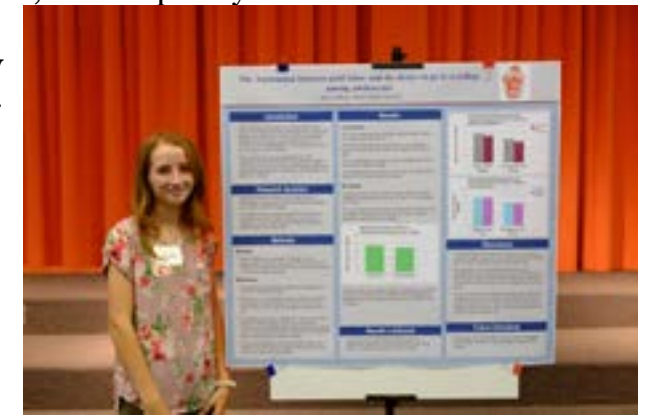


## Data Camp

USU STARS! GEAR UP scholars in Ephraim and Salt Lake City had the opportunity to learn about and practice college-level statistics. Large data sets, hypothesis, advanced statistical analysis, original research, and poster presentations are all elements of advanced college courses, yet our GEAR UP scholars spent five days studying this complex material led by faculty members from Wesleyan University in Connecticut.

Students created their own research projects, and came up with their own questions to be the variables of their data analysis. Students were motivated as they jumped into their research, generating interesting topics like “The Association Between Ethnicity and Perceptions of Teacher Care” and “The Association Between Parent Relationships and College Aspirations Among Adolescents in the United States.” During the duration of the camp, students learned how to manage data, run frequency distributions and percentages, and how to find a relationship between two variables. Although students found the computer coding very challenging, most students agreed that practicing data analysis will help them in the future. “It gives me experience on things that will be important in a future career or in college,” said Ryleigh, a GEAR UP scholar.

At the end of the week, scholars presented their posters to their peers, families, and community members. Data camp fostered a healthy learning environment where students overcame many difficult challenges. By the end of the poster session, it was clear that students showed a marked increase in confidence and pride in their impressive statistical work. Way to go, GEAR UP scholars!



Jaycie J., a GEAR UP scholar, showcases her poster which explores the association between paid labor and the desire to go to college among adolescents.

## Engineering State

USU STARS! GEAR UP scholars experienced four fun-filled days this summer at Engineering State, a camp hosted by the Engineering Department at Utah State. One activity included an exploration into virtual reality programming. This dynamic computer system provides a fully immersive experience within a virtual reality that many believe will be the future of computer-based gaming, travel, human interaction and other activities. Students worked in groups to use this system to create a fascinating, yet simple 3D dynamic environment. The week was spent using experiential learning and collaborative team projects that taught students how engineering has changed our world and what earning a degree in engineering is all about.

## DIA Campus Visit

This summer, Dual Immersion Academy (DIA) students had the opportunity to tour colleges throughout the state of Utah. Their tour began at Brigham Young University on Monday, June 19th. The next day they toured Utah Valley University along with a hike to Timpanogos Cave. On Wednesday, they arrived at Utah State University. Their visit began with a tour of USU’s award-winning campus and ended with a presentation from the Space Dynamics Lab about satellites, space travel, and rockets. DIA scholars then teamed up with USU students to dissect a pig heart and lungs, along with a sheep’s eyeball.

Next, students headed over to the recreation building where they gained knowledge through interactive experiences about kinesiology, human movement, and potential careers



Many DIA students try paddleboarding for the first time at Benson Marina during their USU visit.

in exercise science. The head of the Kinesiology and Health Sciences Department, Dennis Dolny, and other faculty helped to make this one of the most enriching activities of the week! Afterwards, the students participated in an art activity where they were able to put their own spin on a group drawing project and learn the balance between STEM (Science, Technology, Engineering, and Mathematics) and the arts.

In the evening, DIA students went on an adventure to the beautiful Benson Marina on Cutler Reservoir, where they swam, canoed, and paddle boarded. Students finished their tour with a visit to Weber State University and the University of Utah.

## USU STARS! GEAR UP Administrative Team

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- Program Director Cohort 2 - Jim Dorward
- Program Coordinator Cohort 1 - Melia Balls
- Program Coordinator Cohort 2 - Heather Ericson
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