2018-2023 SUMMER STEM & SKILLS PROGRAM

Engineering
Welding
Culinary Arts
Business
Construction

2018 Summer STEM & Skills Program

As part of the camps, students are enrolled into NTU's courses for Welding Fundamentals, Engineering Graphics, and Programing I.

This is the first year for the Enrichment Camps, whose intent is to introduce college level courses to students at an early age.
Many Farms High School students developed solar panels for their high school.


NAVAJO MYTHBUSTERS

2018 NOMCOM

Nation of Maker's Faire Conference
Santa Fe, NM

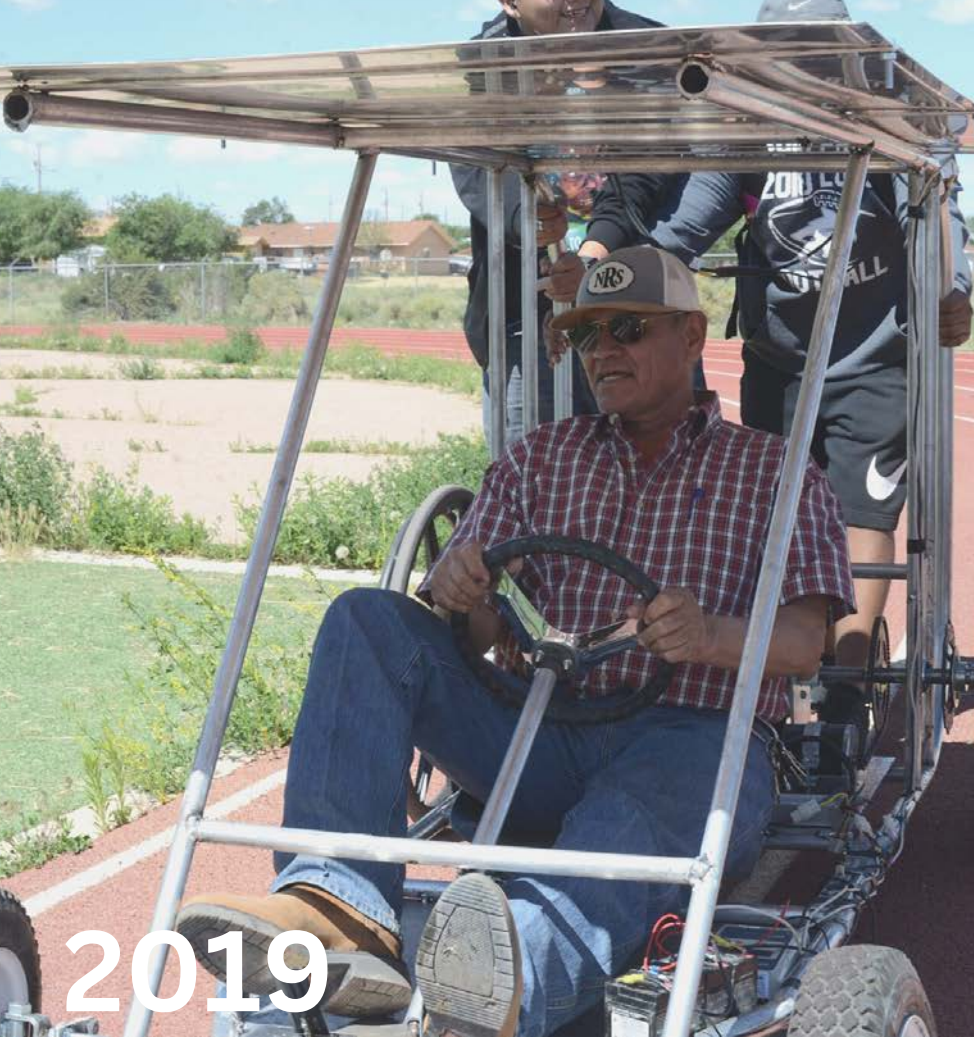
Summer STEM & Skills Program with Many Farms and Wingate High School students. Myth Busters: Adam Savage

Students from Many Farms High School and Wingate High School pose for a photo during the solar go-kart exhibit at Crownpoint High School at the conclusion of the 2019 STEM and Skills summer program.

Crownpoint, NM – Juniors and graduated seniors from Many Farms and Wingate High School took part in Navajo Technical University's 2019 STEM and Skills summer program with the opportunity to earn up to 9 hours of college credit. This is the second year the 4-week summer program has been in operation, which introduces students to the fields of construction, welding, culinary arts, pre engineering and business.

Since the summer program began a year ago, enrollment has grown to 50 high school participants. The program's curriculum emphasizes experiential education, and students are tasked with developing a project that incorporates elements of each academic course. Last year, students from Many Farms designed and constructed a 7.2 KW solar system, while this year, the focus was on developing solar go-karts that could be raced at the culmination of the program and featured at a community maker faire.

"What was neat about this year is we had our students staying on campus, which was a huge benefit because they were able to earn college credits that can be used toward earning a certificate," said Dr. Peter Romine, professor and department head of NTU's Electrical Engineering program. "They each earned at least 3 credits with some earning up to 9 credits."

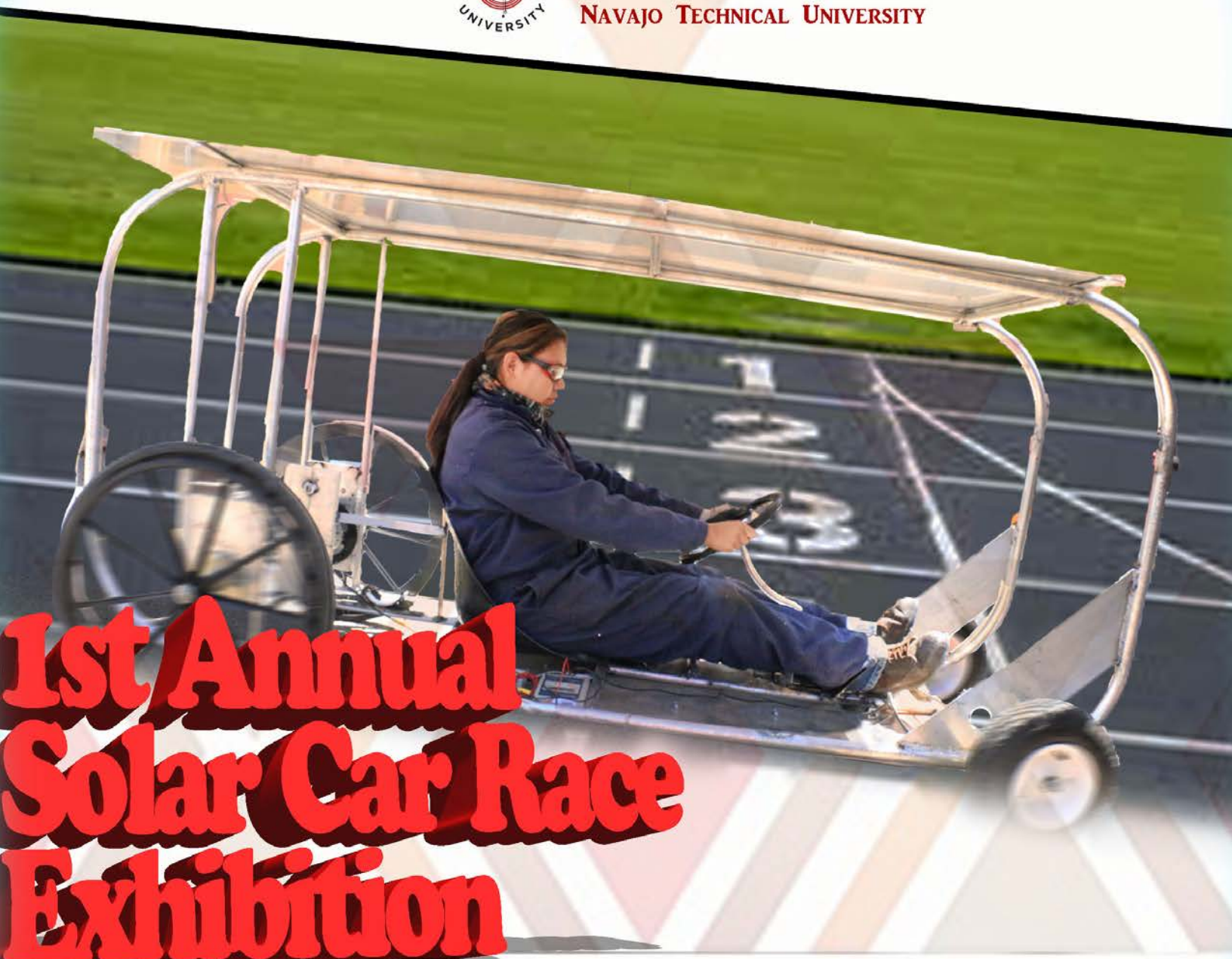


Each of the courses available to students were also offered last year with the exception of business courses in marketing and public relations and principles of management. The courses introduced students to entrepreneurship and how business could relate to the other summer courses being offered. Lakresha James of Tsaile, AZ was one student who enrolled in the business courses after she developed an interest in welding while participating in the summer program last year. James's father, Rolondo James, is also welder, and so she enrolled to develop her business idea, Iron J Welding and Mechanic Shop.

"So far it's coming out good," explained James, who enjoyed staying on NTU's campus during the summer program and plans to enroll in NTU's welding certificate program in the fall. "My instructor helped me in putting things together with flyers, ads, business cards and what not. It's improving so far. My dad told me to take advantage of [the program], and that's what I'm doing."

Students from Many Farms High School and Wingate High School pose for a photo during the solar go-kart exhibit at Crownpoint High School at the conclusion of the 2019 STEM and Skills summer program.
"The response was great and the students learned a great deal about how to market their own businesses and learn more about entrepreneurship," added Christine Reidhead, chair of NTU's Business and Education Department and coordinator of the STEM and Skills camp. "They had a variety of ideas for the types of small businesses they wanted and these courses allowed them to create their own plans for their business ideas."
The summer STEM and Skills program is made possible through funding by the National Science Foundation, Pathways to STEM Careers project and the Transportation Workforce Project with the Mineta Transportation Institute and the U. S. Department of Transportation.

2019 Summer SKILLS & STEM Program
Navajo Technical University



1st Annual Solar Car Race Exhibition

Wednesday June 19, 2019
9:30am to 11:00am
The event will take place at
Crownpoint High School
Track and Field

Watch our duel credit high school students from Many Farms and Fort Wingate high school, race their solared powered go carts aginst each other. Who will be victorious!

W Bears

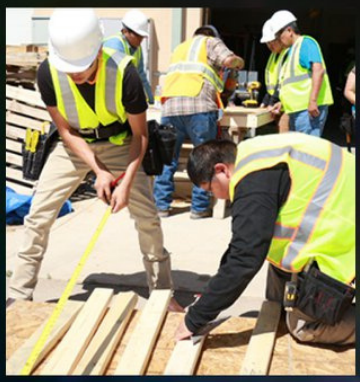
"LOBOS"

2019 Summer SKILLS & STEM Program

MAKERS FAIR

Navajo Technical University

Wellness Center, Crownpoint N.M



Questions? Contact
promine@navajotech.edu
creidhead@navajotech.edu

Thursday June 20, 2019
8:00 - 10:00am

11:00am- 1:00pm Luncheon (Invitation Only)

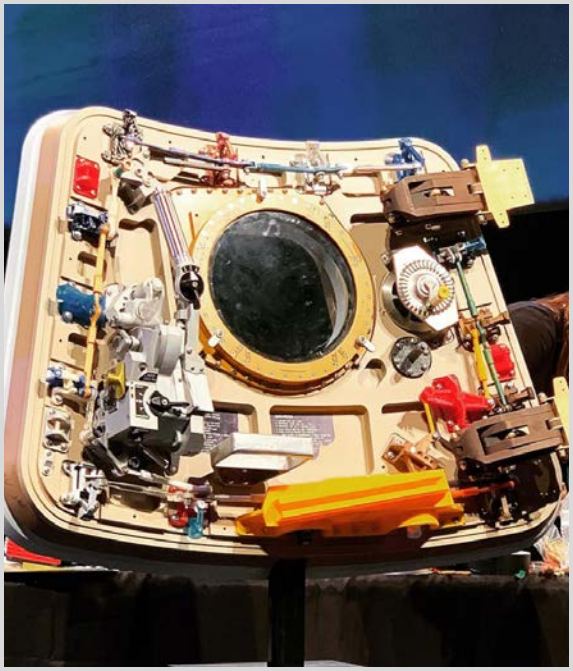
2019 MAKER FAIRE

JULY 2019

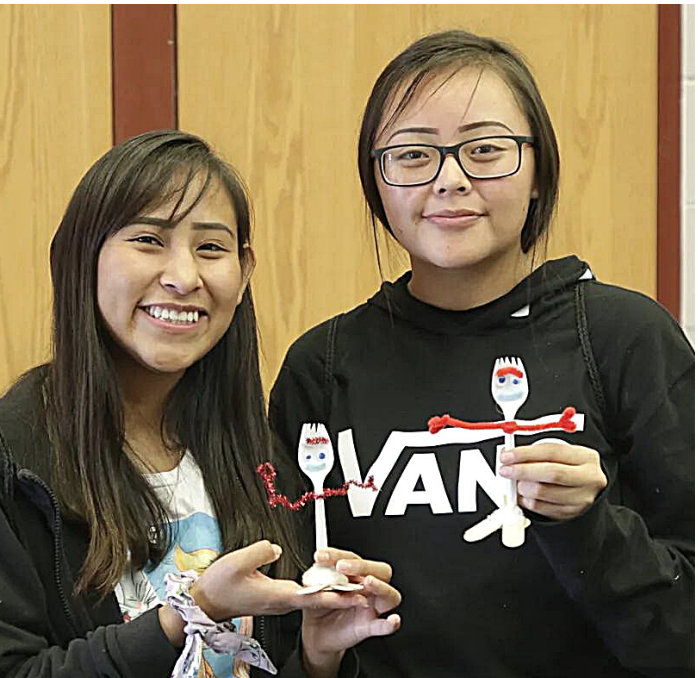
PROJECT EGRESS

50TH ANNIVERSARY APOLLO 11

NATIONAL AIR & SPACE MUSEUM - SMITHSONIAN



NTU SUMMER STEM & SKILLS BUILT A PART TO INCLUDE IN THIS PROJECT
USING ADVANCED 3D SCANS



CREATIVITY, CURIOSITY MERGE AT DINÉ MAKER NATION FAIRE

Noel Lyn Smith
Farmington Daily Times

CROWNPOINT — Wingate High School student Terri Joe never tried wood burning art until the opportunity came up at the Diné Maker Nation Faire at Navajo Technical University.

"Art is my main escape for any stress, any depression, any anxiety in life," Joe said adding that learning about this art form was among the reasons she gave it a try.

The curiosity displayed by attendees at the Crownpoint campus and the do-it-yourself mindset by presenters merged at the event on March 12.

This is the second year that NTU organized the event, which had the theme of "The Evolution of Diné Makers," and featured exhibits and demonstrations on the forms of creation and how the art of making items has evolved for the Navajo people.

There were booths for making moccasins, assembling ties for a tsiiyéél – a traditional hair bun – and weaving. Other areas highlighted skilled trades such as welding, construction and automotive.

It also featured fun creations like button making, costume fabrication, photography and a chili and salsa competition.
Tohatchi High School teacher Albert Jim Jr. sampled chili at the competition.
While it was fun to taste the chili offerings, Jim commended what the event offered his students.
"Students are totally engaged with each of the exhibits. I'm just hoping they're exposed to all the different disciplines that are here. Their interest level is high today," Jim said.

By seeing what can be done creatively – either as a side gig or as a profession – will inspire students to continue their education, he said.
Cypress Mike, a senior at Tohatchi, enjoyed watching the demonstrations by the students from the automotive technology and welding programs at NTU.
At the booth, Mike saw a motorcycle the NTU students modified to accommodate a rider with a disability and equipment welders use on the job.
"It's pretty interesting. All these people out here showing what they have and giving opportunities, ideas to people," Mike said about the event.

There were several activities for attendees to try and to make their own. NTU student Ronda Joe volunteered at the "making a Navajo bun" booth. She said the students focused on the tsiiyéél because, in tradition, it represents a person's intellect and identity.
"We wanted them to learn the significance of the hair bun," Joe said.

At the product challenge for middle and high school students, a team from Crownpoint Middle School displayed the coffee cups and vases they developed by 3D printing. The challenge had students develop items that were culturally relevant and that can be used by elderly Navajos.

In a written statement, the Crownpoint team explained that they developed the coffee mugs and vases "because our grandparents love to drink coffee every morning."
Sophie Ellsworth's product was a blue vase while Julianne Frausto made a yellow coffee mug.
"She drinks coffee every morning, which inspired me to make the mug," Frausto said.

For Ellsworth, the inspiration for the blue vase came from "Indiana Jones and the Last Crusade," which is a movie her grandmother enjoys watching.

The middle school had several teams competing in the innovation challenge. Each team made their products in their science, technology, engineering and mathematics class.

NAVAJO TECHNICAL UNIVERSITY SUMMER PATHWAY PROGRAMS GO DIGITAL

CROWNPOINT, NM – The COVID-19 outbreak reached the Navajo Nation in March forcing classes at Navajo Technical University to switch to an emergency distance education model. Four months later, the virus is now disrupting summer program as NTU's annual Summer STEM and Skills program have switched to online.

The program *has been in operation for the last several years and target high school students and recent graduates. The Summer STEM and Skills program began in 2018 and introduces dual credit students to the fields of construction, welding, culinary arts, baking, automotive technology, pre engineering, and business. Previous years emphasized experiential education within a four week learning period; however, this year's delivery will switch entirely online and will be offered in six weeks from June 15 to July 24. High school students are able to earn up to 9 credit hours if they complete the program.*

The *Summer STEM and Skills program are free to students with tuition, books, and fees covered by NTU. Students are required to have access to Internet and a computer for each program.*

2020

Designing the rug took two weeks by Verna Sue Casamero and her interns, three days to put it together, and another four days to put it into the ground. The interns have also assisted with the summer programs by helping fellow students and helping with the outdoor learning centers in Chinle and Teec Nos Pos.

The rug is located at the front of NTU Main entrance.

Navajo Technical University welding interns; Marcus Burbank, Andre Beno, Kanisha Faber, and Wade Brown have welded NTU's traditional rug.

Dimensions of the loom are approximately 10 (H)' x 6' (W), while the actual carpet is 7' (H) x 4' (W) and 4".

2021 Gazebo Project

Navajo Technical University constructs gazebos to offer outdoor learning spaces
Crownpoint, NM – Navajo Technical University began construction of outdoor gazebos at its main campus and four instructional sites to offer outdoor spaces for instruction and activities for students, faculty, and staff. The project began through a collaboration to develop an approach for the return to full operation in the 2021 Fall semester that presents safe and new learning spaces. The gazebos will be made with features such an electrical white board, and solar panels. Leading the assembly for the project are the construction technology students who are supported by the administration.

“We are looking for true engagement in every phase of the project, from concept to site prep to landscaping to reservations for classes in the Fall,” said NTU Provost Dr. Colleen Bowman in her discussion about the installation of Gazebo’s across NTU and Instructional sites. “ As the structures are put in place by our trades students, other students will take on the task of completing the aesthetics of each outdoor learning environment.”

The student leadership team consist of NTU graduates who are overseeing the development are; Tyson Ramone Assistant Project Manager, Felicia Chischilly Project Historian, and Keanu Jones Project Photographer/Videographer. The first gazebo to be built is a 24’ x 24’ located east of the cafeteria overlooking the campus. There will be two other gazebos placed at this location. Students from NTU’s construction technology and welding programs have led the first phase by pouring concrete for the foundation of first gazebo.

“Participating with hands-on classroom activities like this gives me a better understanding of the kind of work I will be doing after I graduate,” stated NTU construction student Kemitri Barbone about his experience as a student in the program. “I want to see this project finished and am excited to enroll this fall so I can enjoy what I helped build.”

The final phase will be overseen by NTU’s Energy System Instructor Derrick Lee and his intern, who will install solar panels on the roof of the gazebo. The power will be used to operate an electrical white board which will be fabricated by Shanidiin Piechowski-Begay, NTU’s Automotive Instructor. The white board will be designed mechanically to open while it is being used by students and instructors.

The gazebos kits were purchased with CARES funding for all NTU campuses and will allow students to engage in project-based learning. Dr. Peter Romine, Ph.D. NTU Head of Electrical Engineering, assisted with locating other funding sources from the US Department of Transportation (DOT), San Jose State University’s (SJSU) Mineta Transportation Center (MTC) and NTU Transportation Workforce Development.

Certificate
Electrical Trades
Construction Technology
Engineering Technician
Welding

A.A.S.
Construction Technology
Energy Systems
Engineering Technology

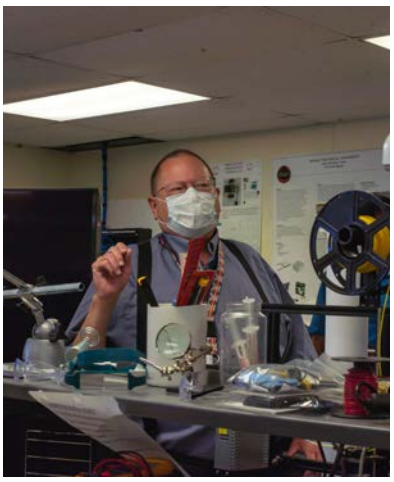
B.A.S
Advanced Manufacturing Engineering Technology

B.S
Electrical Engineering

NAVAJO TECHNICAL UNIVERSITY
WHERE CHALLENGES ARE FACED!

2022
DINE MAKER FAIRE

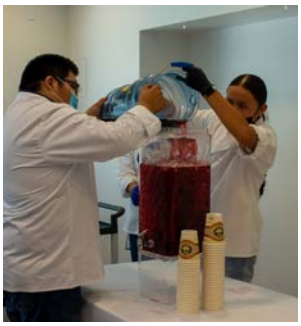
Crownpoint, NM – On June 30, 2022, Navajo Technical University and Wingate High School students presented their projects they had completed over the summer Stem and Skills program.

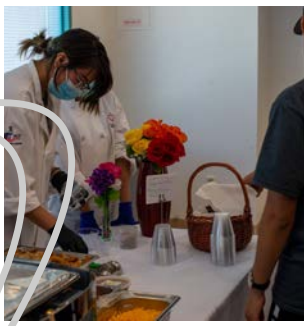


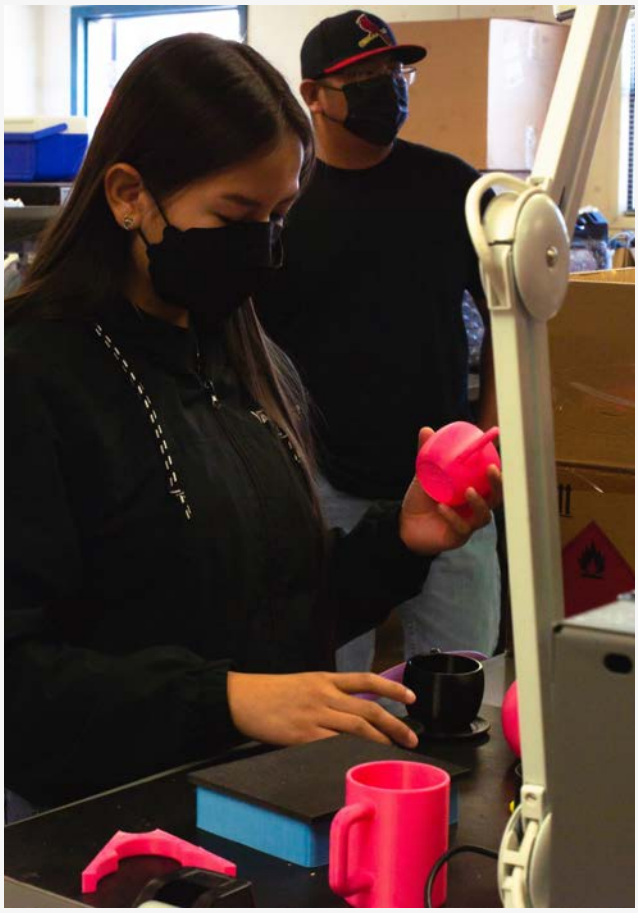
Students kicked off the presentation in Engineering with Dr. Peter Romine as lead instructor. Students designed their work with 3D printing technology and also created robotic self-driving cars. For example, students can devise AI models for object detection and navigation that are used in self-driving cars while applying domain knowledge and engineering skills to uniquely devise an impactful system used in everyday technologies, such as a Roomba. Dr. Peter Romine really incorporated Electrical Engineering into Dine' Maker Fair which helped students with hands-on projects.

Christine Reidhead and the marketing students developed their own business and introduced a marketing plan for promotion. Some of the students learn to run a business; to operate, to direct, to oversee, and to manage. Both marketing and culinary arts students worked on a video together to create a hands-on task for the summer program as well. Each video was edited and scripted by each student for about a minute long.

2022 Summer STEM & Skills



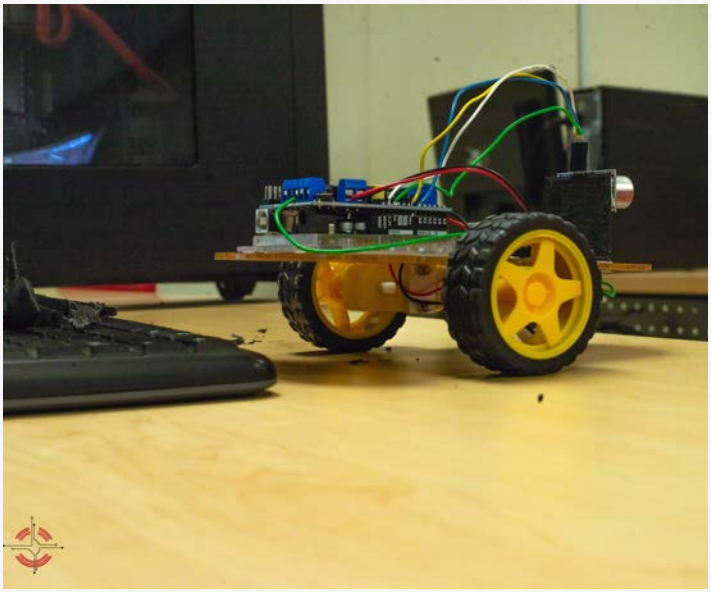




Welding instructor Christopher Storer and his students learned to create flowers in metal form. Rose stems were made from rebar while the flower was made from sheet metal. Heat hot enough makes the metal bend while making it bloom. Students made projects that are exotic as pineapple trees.

Carpentry instructor Tom Bebo and his interns Colby Abeita and Tonya Yazzie, were helped by the high school students to make a gazebo which is located on the east side of the multi-purpose building. The concept gazebo was first introduced by the provost to help create outside learning centers. Outside classrooms. There are two gazebos'; one located on the main campus and the other in Zuni. The gazebos are solar powered.

Students in Culinary Arts made their debut making Navajo Tacos with three different main ingredients. Friends and family were the judges. Choices of the main ingredients included; chicken, turkey, and bison. Served in a small proportion in a cup. Topped off, students made cupcakes; key lime, tiramisu, and red velvet. Chef Brian Tatsukawa oversaw the project. The project consisted of cooking as well as sanitation duties.



NTU Summer STEM & Skills Program 2023

Crownpoint, NM - Navajo Technical University (NTU) is excited to announce the launch of its Summer STEM & Skills program for high school students. The program is designed to provide students a unique and engaging learning experience by offering hands-on skills in various fields, including welding, construction, culinary arts, engineering, and marketing.

The program is run by experienced instructors who provide individual attention to each student, ensuring that they understand the course material comprehensively while acquiring practical skills. With the program entering its sixth year, it has proven to be a great success, and many students have benefited from the range of skills they acquire at NTU.

Students in the program learn the fundamentals of their chosen field and the practical applications of those skills. They also explore possible careers in their respective fields and gain real-world experience with hands-on projects through the program.

This Summer STEM and Skills program allows high school students to get ahead in their studies while enjoying a unique on-campus experience at NTU. Participating students earn college credit, giving them a head start in their college education and the chance to get a feel for college life.

NTU believes learning should be fun and engaging, which is precisely what students experience with the Summer STEM & Skills program. The courses are structured to keep students engaged and interested, fostering interest in the fields of study and encouraging students to explore career paths they might have yet to consider.

Dr. Peter Romine, the mastermind of this program, has been at the forefront of shaping the program into its current iteration, ensuring that students receive the highest level of instruction and an excellent learning experience. The program is supported through research and workforce development grants with the US Department of Transportation, National Science Foundation, Department of Energy, and the National Aeronautics and Space Administration.

The program culminates with the Dine Maker Faire, an event where each student showcases what they have made within their respective course. This event allows students to share their work with others and inspire other students to pursue their passions.

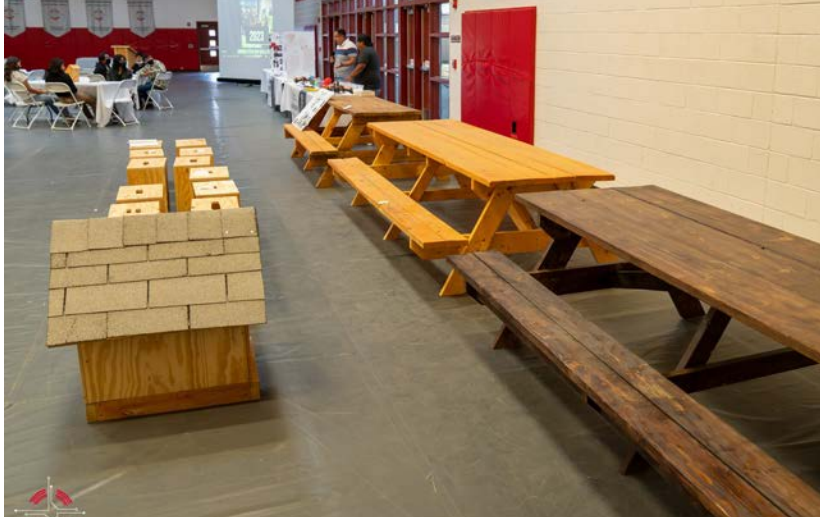
Overall, Navajo Technical University's Summer STEM & Skills program provides a platform for high school students to learn valuable hands-on skills, explore career paths, and gain college credit during the summer months. The program's focus on practical skills and individualized attention from instructors provides an excellent opportunity for students to jumpstart their academic and professional careers.

NTU 2023 DINE' MAKER FAIRE

Crownpoint, NM – On June 29, 2023, Navajo Technical University (NTU) hosted its 6th annual Dine' Maker Faire inside the Wellness Center from 9 AM – 11 AM. Students showcase their work and skills learned over the last four weeks.

NTU's Summer STEM and Skills program began in 2018 and introduced dual credit students to construction, welding, culinary arts, baking, automotive technology, pre-engineering, and business. High school students can earn up to 9 credit hours if they complete the program. The program is designed to provide students with a unique and engaging learning experience by offering hands-on skills in various fields, including welding, construction, culinary arts, engineering, and marketing.

Fifty Wingate High School students gathered inside the Wellness Center along with staff and faculty, as the audience will be able to walk around and see other students' skills and final projects during their four weeks at NTU at their set-up booths. Christine Reidhead, Assistant Professor / Chair for the School of Business and Education, coordinated the event by introducing Dr. Colleen Bowman, Dr. Casmir I. Agbaraji, Jason Arviso, and NTU instructors. Students were given a certificate of achievement for participating in the NTU summer STEM and skills program. The student's final projects were displayed as centerpieces during the event. Sammy the Skyhawk made a surprise visit on campus and was greeted with hugs and selfies with students.



Students in Electrical Engineering designed their work with 3D printing technology and drone technology. For example, students learned different parts of a drone and how they work. Drones can be as large as an aircraft or as small as the palm of your hand. Dr. Peter Romine incorporated Electrical Engineering into Dine' Maker Fair, which helped students with hands-on projects.

Roy Rafael stated, "The Wingate students are attentive and ready to learn. We had fun teaching them to design in CAD and even create a handheld personal fan. They even had a chance to 3D print models downloaded off the internet."

"The Wingate students enjoy learning about the EE program. They learned about measuring AC & DC, using a multimeter for different measurements." – Dr. Sundaram Arumugam, Asst—Professor of Electrical Engineering.

Welding instructor Christopher Storer and his students learned that each metal and metal alloy respond differently to heat, and in this way, they can be manipulated. Metals expand and soften when heated, resulting in different uses and applications. They also respond in different ways to the various welding methods used. Heat hot enough makes the metal bend while making it bloom. Students created objects such as tiny teepees, hogans, and flowers.

The high school students in the carpentry program made birdhouses, doghouses, and picnic tables with instructor Tom Bebo. The picnic table is an innovative and functional addition to any household. The outdoor table is sure to please as it gives it a natural, rustic touch and the well-made construction gives you and your guests a sturdy, safe way to enjoy eating outside.
Christine Reidhead says, “This program exposes high school students to various college classes available to them.” Christine and her marketing students developed their businesses and introduced a marketing plan for promotion. Some students learn to run a business, operate, direct, oversee, and manage. Marketing students worked on a video to create a hands-on task for the summer program.

Students in Culinary Arts debuted by going off a theme from a character they have made through 3D printing from the Electrical Engineering program. The first group chose the character from the movie Ratatouille which is French cuisine; the second group went with Spirited Away, which defines Tawainese traditional foods; and the last group chose Demon Slayer from a Japanese-inspired menu. Small proportions were served to guests and the audience. Chef Brian Tatsukawa oversaw the project. The project consisted of cooking, baking, and sanitation duties.

“Mise en place skills are life skills.” – Brian Tatsukawa, Culinary Arts Instructor.

Overall, Navajo Technical University's Summer STEM & Skills program provides a platform for high school students to learn valuable hands-on skills, explore career paths, and gain college credit during the summer months. The program's focus on practical skills and individualized attention from instructors provides an excellent opportunity for students to jumpstart their academic and professional careers.

Al Martinez, Headteacher at Wingate High, states, "NTU offers us a great opportunity for dual credit, and the program offers us what we don’t have. This summer enrichment program provides us with an opportunity to do something different. The students enjoy it and thrive doing an excellent job. NTU supports our students first, so we thank Christine Reidhead, Dr. Peter Romine, and Dr. Casmir I. Agbaraji for hosting us.”