Advancing STEM Workforce Preparation and Research Capacity at Tribal Colleges and Universities

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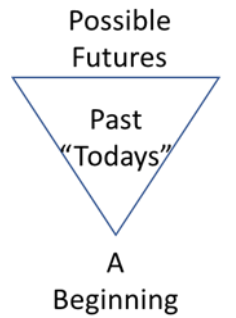
Crownpoint, New Mexico

How to Advance STEM Workforce Preparation?

- Build TCU Research Capacity by:
  - Build a diverse TCU Research Workforce
    - You need TCU STEM Graduate Programs to build this workforce
  - Build TCU Research Centers for this workforce to learn & practice
    - Project-Based Hands-on Experiential Learning to “Learn by Doing”
  - Build Pathways to STEM Careers of Purpose
    - Starting as early as you can (Build Readiness)
    - ‘IT IS EASIER TO BUILD STRONG CHILDREN THAN TO REPAIR BROKEN MEN’
  - Build Sustainable TCU Economies based on these capacities
  - Build upon the successes of others before you
- In other words, “Build the STEM Ecosystem”

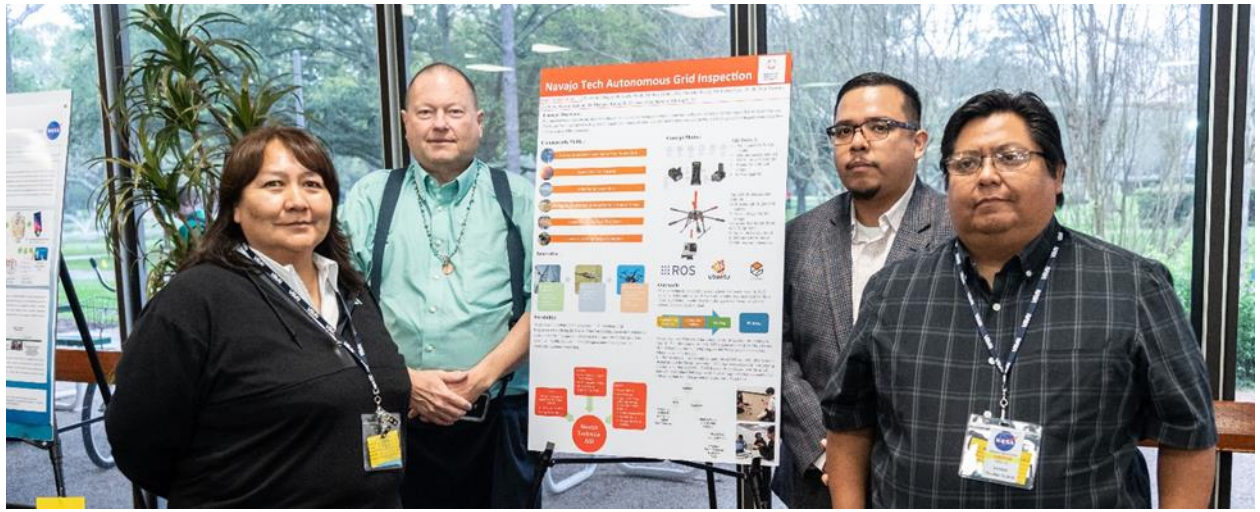
Ph.D. STEM
M.S. & M.A.S. STEM
+ Pathways + Supporting Skills

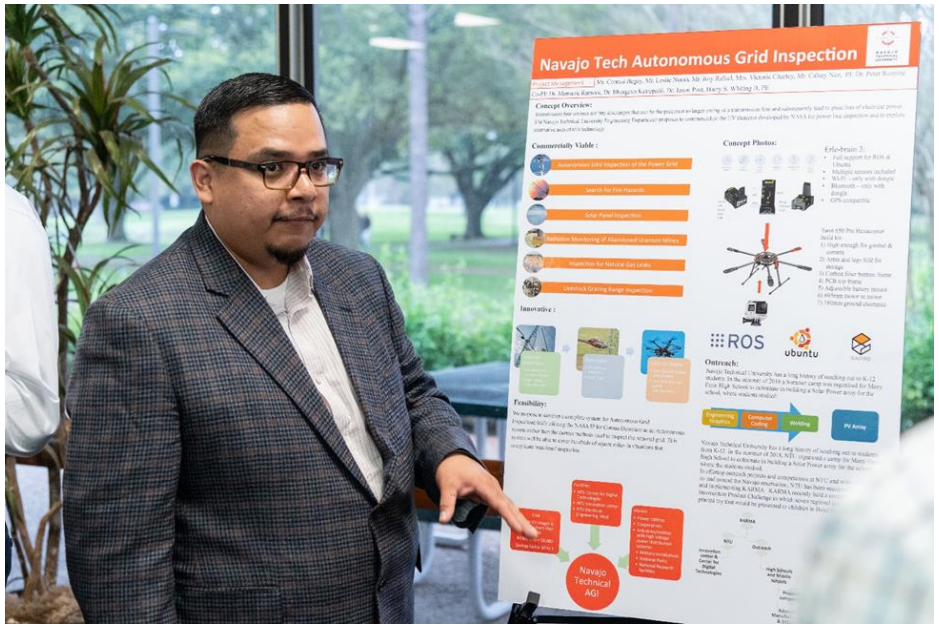
STEM Research Workforce

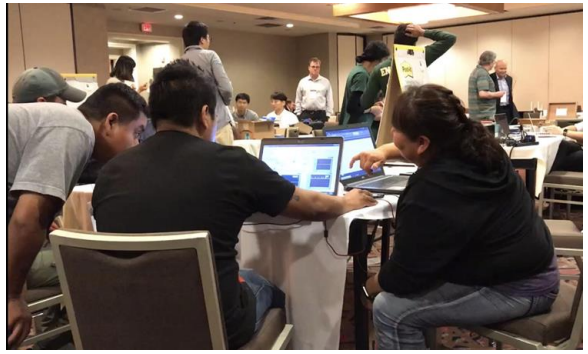


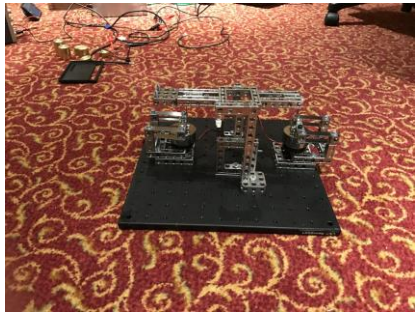
2019 NASA MITTIC Tech Transfer Competition

The Navajo Tech Team – Autonomous Powerline Inspection



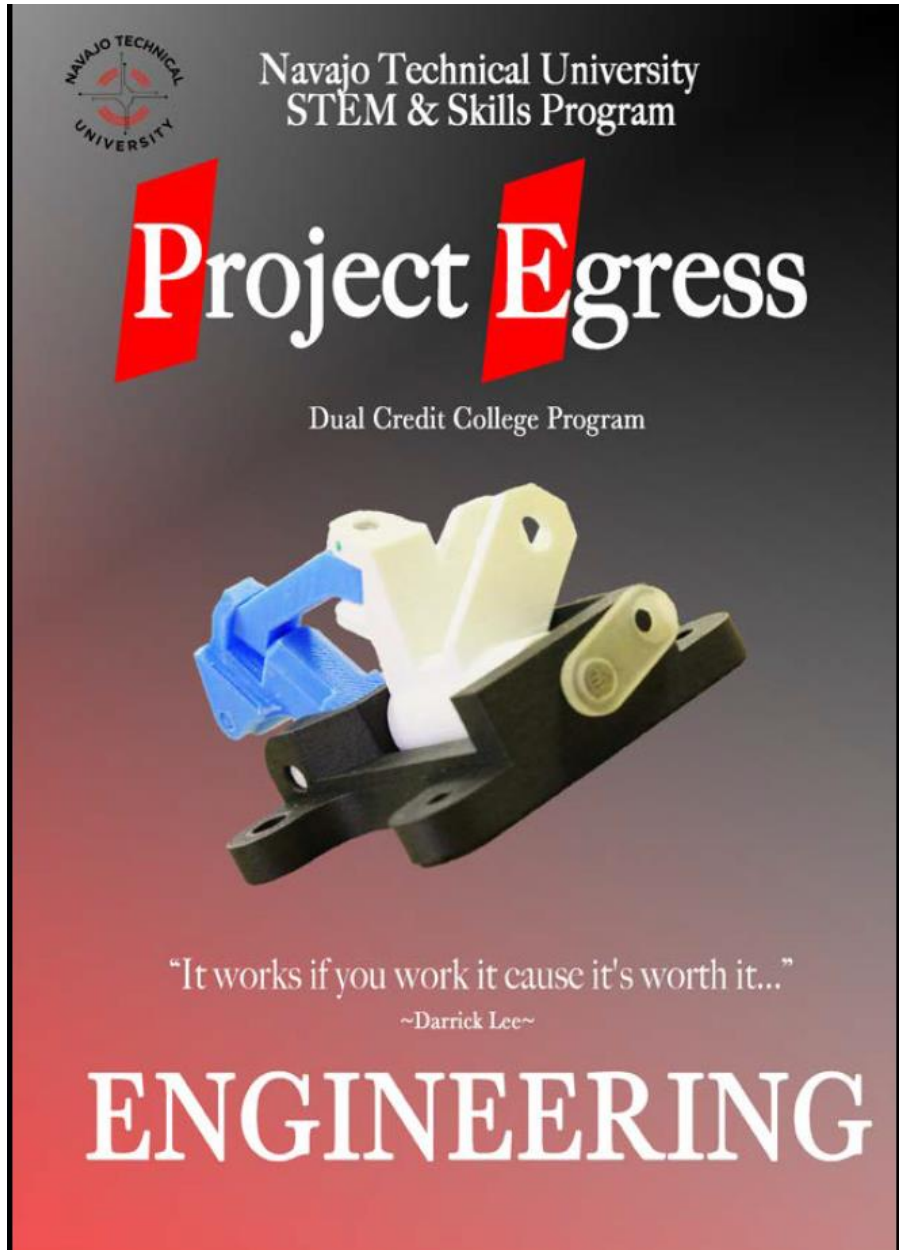






2019 ASPE Design Challenge

Navajo Tech Team - The Kibble Balance



TESTED

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Meet the Maker: Navajo Tech

Project Egress gave the high school students participating in Navajo Tech's engineering graphics course the opportunity to not only learn about 3D printing, collaboration AND Apollo 11, but earn college credit besides!

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Project Egress

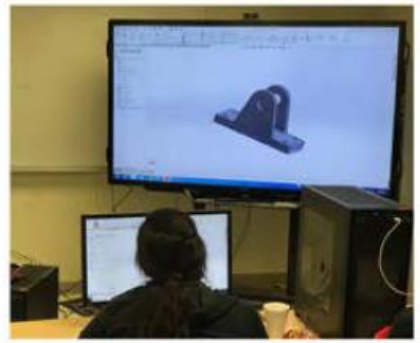
Project EGRESS was a great opportunity for students in our 2019 Summer STEM & SKILLS Dual Credit Program to apply what they learned during the summer. High school students from Many Farms, Arizona and Wingate, NM were able to participate in this once in a lifetime experience tobe a part of history to commemorate the 50th anniversary of the Apollo 11 space mission.

Conrad Begay instructing a class

The students were excited to be working with Savage Industries alongside, Mr. Adam Savage. This was not only hands on experience inworking with 3D CAD, but also a lesson in the history of the Apollo space missions.

Darrick Lee feeding 3D printing machine

The high school students were able to earn College credits by participating in our ENGR-130 Engineering Graphics course. Students learned how to design parts in 3D CADand how to print them on various 3D Printers.



Highschool student watches instructor display a piece of the module of crew hatch.

In the final two weeks of class, the students earned their final grades by concentrating on preparation for and printing the final working 3D model for the unified crew hatch. Using three different models of 3D printers, they were able to relate their own knowledge of how to use 3D CAD to build these 3D sketches and transfer them into printable STL files.

They were able to learn each step in downloading the STL files, transferring to each software for the different 3D printers, and load them into the 3D printers for print.

In the end, this was great for the students because it brought them closer together by building fundamental team working skills and working with an interdisciplinary team. This was truly a great and exciting experience for these students.

The Project EGRESS team wishes to acknowledge the support we received from the Navajo Tech Advanced Manufacturing Center, the Navajo Tech Innovation Center, and Project KARMA

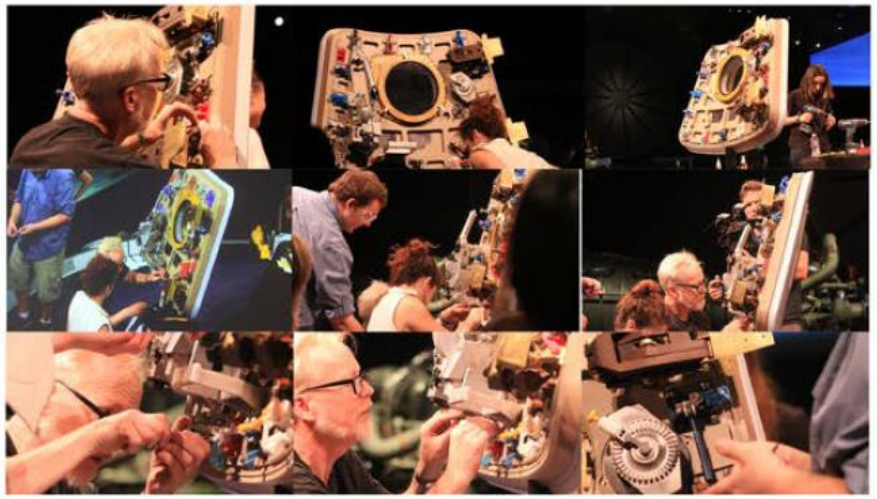
Sincerely,

Darrick Lee, NTU BSEE May 2019

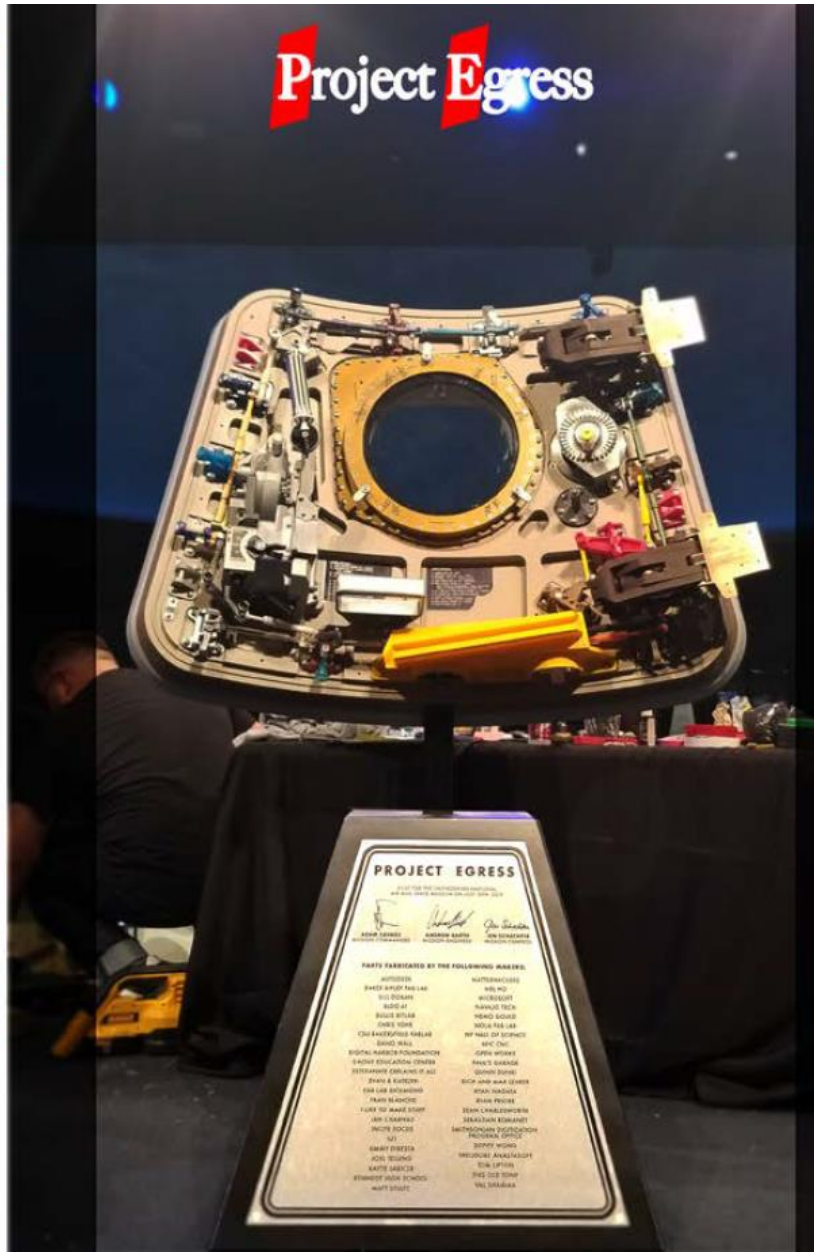
Engineering Graphics Instructor &

Project EGRESS Lead

Darrick Lee filing down and fitting parts.



After 8 long hours (standing room only), Adam Savage and his team completed the building of the module hatch. All engineers and those who took part in Project Egress signed the hatch. The hatch is staged at the Smithsonian National Air and Space Museum's Moving Beyond Earth gallery.



2020 Summer STEM & SKILLS

6 WEEK PROGAM - FULLY ONLINE

June 15 - July 24, 2020

Register TODAY!

DUAL CREDIT STUDENTS

Contact: Freda Joe at fjoe@navajotech.edu

*Requirements: Must have access to computer and internet

ESTABLISHED 1979

NAVAJO TECHNICAL UNIVERSITY

SIHASIN

DUAL CREDIT

2020 Summer STEM & Skills Program Schedule – ONLINE

June 15 – July 24, 2020

http://www.navajotech.edu/stem-and-skills-program

CLASS SCHEDULE:

BLOCK A: 8:30 AM – 10:00 AM

Crs. Dept./No.	Course Title	Cr. Hrs.	Days	Instructor	Class Limit
CKG208-1	Professional Cooking Basics	3	Mon-Fri	B. Tatsukawa	10
WLD105-1	Fundamentals of Welding I	3	Mon-Fri	C. Storer	10
AUT101	Introduction to Automotive Technology	3	Mon-Fri	S. Piechowski	10
ADM101	Keyboarding and Formatting I	3	Mon-Fri	A.Chischilly	10
CT103-1	Introduction to Craft Skills	3	Mon-Fri	T. Bebo	10
MTH1220	College Algebra	4	Mon-Fri	S. Han	10
EE102	DC Circuits & System	3	Mon-Fri	S. Arumugam	10
CS101	Programming 1	3	Mon-Fri	S. Ragavanantham	10

BLOCK B: 10:30 AM – 12:00 PM

Crs. Dept./No.	Course Title	Cr. Hrs.	Days	Instructor	Class Limit
CKG208-2	Professional Cooking Basics	3	Mon-Fri	B. Tatsukawa	10
WLD105-2	Fundamentals of Welding I	3	Mon-Fri	C. Storer	10
AUT103	Electric and Electronic Systems	4	Mon-Fri	S. Piechowski	10
ADM111	Keyboarding and Formatting II	3	Mon-Fri	A. Chischilly	10
CT103-2	Introduction to Craft Skills	3	Mon-Fri	T. Bebo	10
BKG209-1	Baking Basics	3	Mon-Fri	W. Cloud	10
ENGR123	Computer Skills for Engineering	3	Mon-Fri	A. Vellingiri	10
GIT105	Fundamentals of Cartography	3	Mon-Fri	N. Nkongolo	10
CS1120	Computational Thinking	3	Mon-Fri	S. Ragavanantham	10