Innovation and Collaboration: Transfer Pathways in Engineering to Address Workforce Gaps

Agenda

Introductions

A Reimagined Partnership to Address a Workforce Gap- Marjaneh Gilpatrick

Engineering Pathways for Access, Community & Transfer (EPACT) - Anne Flesher & Indira Chatterjee

Questions & Answers

Group Discussion

Share outs

Introductions

Marjaneh Gilpatrick, Ed.D.
Associate Vice President,
Statewide Initiatives & Alliances
(602) 776-4684
Marjaneh.Gilpatrick@nau.edu

Anne Flesher
Academic Dean
EPACT RED, PI
Truckee Meadows
Community College
AFlesher@tmcc.edu

Indira Chatterjee
Interim Dean of Engineering
University of Nevada, Reno
775-784-1350
indira@unr.edu

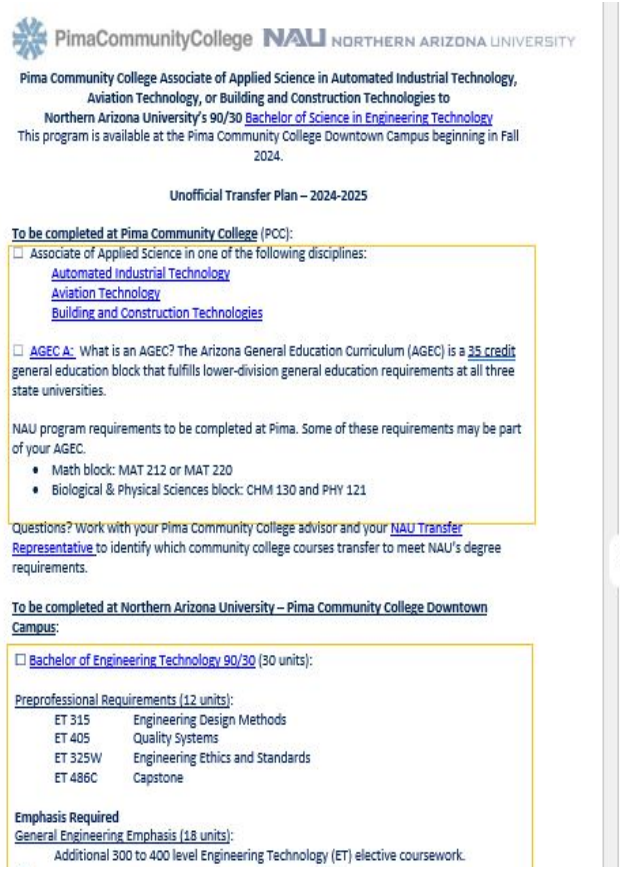
A reimagined partnership to address a workforce gap: Career and Degree Transfer Pathway

- Re-imagined bachelor of science in engineering technology
- Pima Community College
- Northern Arizona University
- Informed by industry advisory boards
- Feeders:
- Automotive Technology; Aviation; Construction Management
- Faculty Driven
- Collaboration with academic advisors
- Stackable
- Aligned with ABET standards
- Workforce gaps in engineering applications

Transfer Plan

PIMA COMMUNITY COLLEGE ASSOCIATE OF APPLIED SCIENCE IN AUTOMATED INDUSTRIAL TECHNOLOGY, AVIATION TECHNOLOGY, OR BUILDING AND CONSTRUCTION TECHNOLOGIES TO

NORTHERN ARIZONA UNIVERSITY'S 90/30 BACHELOR OF SCIENCE IN ENGINEERING TECHNOLOGY



PimaCommunityCollege NAU NORTHERN ARIZONA UNIVERSITY

Pima Community College Associate of Applied Science in Automated Industrial Technology, Aviation Technology, or Building and Construction Technologies to Northern Arizona University's 90/30 Bachelor of Science in Engineering Technology

This program is available at the Pima Community College Downtown Campus beginning in Fall 2024.

Unofficial Transfer Plan – 2024-2025

To be completed at Pima Community College (PCC):

☐ Associate of Applied Science in one of the following disciplines:
- Automated Industrial Technology
- Aviation Technology
- Building and Construction Technologies

☐ AGEC A: What is an AGEC? The Arizona General Education Curriculum (AGEC) is a 35 credit general education block that fulfills lower-division general education requirements at all three state universities.

NAU program requirements to be completed at Pima. Some of these requirements may be part of your AGEC.
- Math block: MAT 212 or MAT 220
- Biological & Physical Sciences block: CHM 130 and PHY 121

Questions? Work with your Pima Community College advisor and your NAU Transfer Representative to identify which community college courses transfer to meet NAU's degree requirements.

To be completed at Northern Arizona University – Pima Community College Downtown Campus:

☐ Bachelor of Engineering Technology 90/30 (30 units):

Preprofessional Requirements (12 units):

ET 315	Engineering Design Methods
ET 405	Quality Systems
ET 325W	Engineering Ethics and Standards
ET 486C	Capstone

Emphasis Required

General Engineering Emphasis (18 units):

Additional 300 to 400 level Engineering Technology (ET) elective coursework.

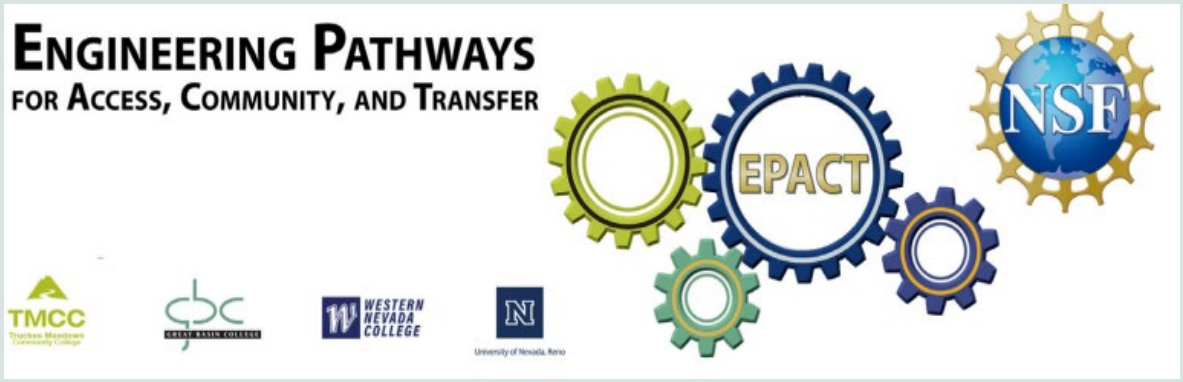
PimaCommunityCollege NAU NORTHERN ARIZONA UNIVERSITY

Semiconductor Fabrication Emphasis (18 units):

ET 411	VLSI Design
ET 412	Electronic Materials
ET 413	Electronic Devices
ET 414	Semiconductor Manufacturing
ET 415	Semiconductor Characterization

No more than two Ds are allowed in ET coursework.

* This program may also be completed as a two-year transfer or a four-year stand-alone option at the Northern Arizona University Flagstaff Campus.



EPACT ENGINEERING PATHWAYS FOR ACCESS, COMMUNITY, AND TRANSFER

EPACT is a collaborative project between three Community Colleges and a University in the Nevada System of Higher Education (NSHE); Truckee Meadows Community College (TMCC), Great Basin College (GBC), Western Nevada College (WNC), and University of Nevada, Reno (UNR).

Funded by the National Science Foundation (NSF), Revolutionizing Engineering Departments (RED) program, the EPACT project aims to support engineering students at Truckee Meadows Community College (TMCC), Western Nevada College (WNC), and Great Basin College (GBC), with a unique opportunity to complete three essential engineering degree course requirements at their home institutions that will transfer seamlessly to engineering degree programs at the University of Nevada, Reno (UNR) and to graduate in a timely manner with a B.S. degree in an engineering discipline.

We acknowledge the support of the National Science Foundation - Award Number 2330583

EPACT Project Goals

1. Address structural and cultural barriers faced by community college engineering transfer students
2. Foster collaboration between engineering faculty at community colleges and the College of Engineering, University of Nevada, Reno
3. Improve access for transfer students by developing a course-sharing model for essential engineering courses
4. Bring about cultural change within the community colleges and the University
5. Establish a scalable and sustainable model for broader implementation

EPACT Project Courses

ENGR 241: STATICS

Course topics include resolution and composition of forces, equilibrium of force systems, friction, centroids, moments of inertia, cables, beams, fluid statics, work.

ME 242: DYNAMICS

Kinematics and kinetics of particles and rigid bodies in two and three dimensions; relative motion; work and energy; impulse and momentum.

EE 220: CIRCUITS

Topics covered include resistive, capacitive, and inductive components in DC and AC circuits and the analysis techniques.

All courses will be delivered online, and transfer seamlessly to UNR College of Engineering degree programs.

- First Two - Year College awarded an NSF RED Grant
- Consortium Model project
- Convene a team
- Shared Vision
- First Two-Year College awarded an NSF RED Grant
- Summer Symposium
- Deep Collaboration
- Community of Practice
- Advisory Board
- Course Development
- Marketing
- Recruiting
- Qualitative & Quantitative research

Start Your Engineering Degree at TMCC

- Engineering at TMCC provides students with the strong foundation needed to pursue degrees and careers in engineering and technology.
- EPACT provides support for Engineering transfer students with a collaborative course-sharing model between TMCC, GBC, and WNC.
- Take Engineering classes through EPACT in small groups that focus on student support.
- Earn your Engineering Associates Degree (AS) in two years, then transfer to UNR as a Junior.
- Contact Dr. Dan Loranz at *dloranz@tmcc.edu* for information on how to get started at TMCC.

EPACTRED.TMCC.EDU

EPACT is funded by the National Science Foundation Award # 2330583

TMCC
Truckee Meadows Community College

The TMCC Marketing and Communications Office has approved this for posting. KK0325

Questions

Guiding Questions for Tabletop Discussions

What are the key steps in the collaborative process between the two institutions to develop a new degree?

- *How do faculty and advisors at the 2 institutions collaborate to contribute to its design?*
- *What key institutional and community stakeholders should be involved in the implementation of the new degree?*
- *How does the collaborative partnership allow the two institutions to provide a seamless and successful transfer experience for the students?*

What are the key components of a multi-institution collaboration for a seamless transfer process for community college engineering students?

- *How do faculty at each institution collaborate towards success of the project?*
- *What key institutional and community stakeholders should be involved?*
- *How does the collaborative partnership contribute to engineering transfer student success?*
- *Are there any collaborative projects you are considering for the future?*

Thank you!

Marjaneh Gilpatrick, Ed.D.
602-776-4684
Marjaneh.Gilpatrick@nau.edu

Indira Chatterjee
775-784-1350
indira@unr.edu

Anne Flesher
775-673-7279
AFlesher@tmcc.edu