

Reimagining Engineering Careers

ASEE-EDI Panel



HOW MIGHT WE REIMAGINE CAREER PREPARATION AT FIU?



EVA MEJIA

THE CHALLENGE

HOW MIGHT WE REIMAGINE CAREER PREPARATION AT FIU?

Florida International University (FIU) came to IDEO with an ambitious goal – help CEC students enter the workforce with a competitive edge and become leaders in the tech industry.

This journey requires an iterative approach, starting with a unifying vision. These insights pull from the first step of this journey: aligning decision makers on a vision for career pathways for CEC students and unique opportunities to address both students' and employers' needs.

WHAT WE HEARD



WHAT IS AN INSIGHT?

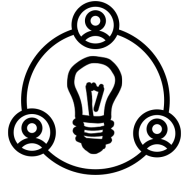
IDEO's DEFINITION:

A kernel of truth or a pattern of behavior that we've identified through design research. Numerous observations can lead to an insight, but insights are a bit more broad—insights represent a truth. Insights lead us to opportunity areas.

A good insight is authentic and revealing.



INSIGHT #1



Career readiness requires career exploration.

Students need to develop the skills & mindsets to continuously experiment with future pathways.

INSIGHT #1



In this day and age, from a mental health – development standpoint. ***I've never seen these pressures, and challenges*** with socialization, or lack thereof.”

–Career Services Expert



They are on a train and not looking out the window, ***they are just a passenger.***”

–FIU Faculty



I think that first year is very important and getting used to FIU. ***We are not taught to learn in school.*** Freshman year is all about learning to learn.”

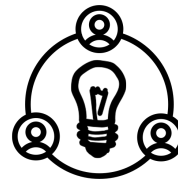
–FIU Student



If we continue, then we will lose them, let them meander, engineering, so rigid, if you miss a year different pressure point. Let them explore, ***but let them find their balance.*** Let them be exploratory and aware of the opportunities.”

–Engineering Career Expert

INSIGHT #2



Employers expect students to have certain soft skills and hard skills.

Students expect to gain both soft skills and hard skills in college, but right now they have to look outside of the classroom to fill those gaps.

INSIGHT #2



“

Curriculum is too theory based. I want more team environments and interview prep.”

–FIU Student

“

I learned GitHub through a UPE project. ***It was never covered in the classroom*** and it's such a foundational element.”

–FIU Student

“

When we decide to align skills to courses, ***give students extra*** without giving up hours at work.”

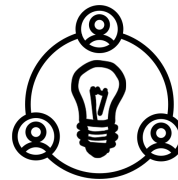
–FIU Faculty

“

We would integrate our [CodePath] curriculum into [FIU's] existing curriculum.”

–FIU Partner

INSIGHT #3



Everyone is going above and beyond, and that's still not enough.

Without alignment from the top, FIU's many career stakeholders are diluting their potential impact.

INSIGHT #3



We're here for a mission.
Career readiness is everyone's job, and we're all here for that reason."

-FIU Faculty



Trying to formally establish the ecosystem. They have "Compass Meetings" three times a year where we ***get all colleges together.***"

-FIU Administration



Support needed from the very top.
CTD has suffered some neglect and not knowing where they fit. "

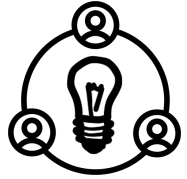
-FIU Administration



Maybe we thought we could do this decentralized, but ***maybe we need to take a step back*** and reassess how we are structured. Once you talk about budgets and restructuring, things can get messy."

-FIU Administration

INSIGHT #4



FIU has interest and investment from many different key players.

With creativity and coordination, these resources can have a larger impact and be used to attract more funding.

INSIGHT #4



Shellhacks provides opportunities for people to BUILD TRUST!!!! These are opportunities to see team collaboration, problem solving, and passion.”

-FIU Alum



Students have all of these problems with employers and I could help make this a better relationship.”

-FIU CEC CTD



Google hosted a resume workshop earlier that week and they joined one of our classes to ***share more about their resume building*** workshop.”

-FIU Student



I would need to have additional resources to maintain the quality of any of these new ideas. There are so many similar events happening across different parts of the university, ***imagine if they worked as one?***”

-FIU Administration



EDI

SAN JUAN | CARIBE HILTON
PUERTO RICO

April 16th - 19th, 2023





Engineering for One Planet
ASEE EDI 2023
April 18, 2023

Cindy Cooper
Senior Program Officer
The Lemelson Foundation





Vision:

Sustainability becomes a core tenet of the profession.

Goal:

Transform engineering education so all engineers are equipped to design, build, and create in environmentally and socially sustainable ways.



Why embed sustainability across all engineering education?

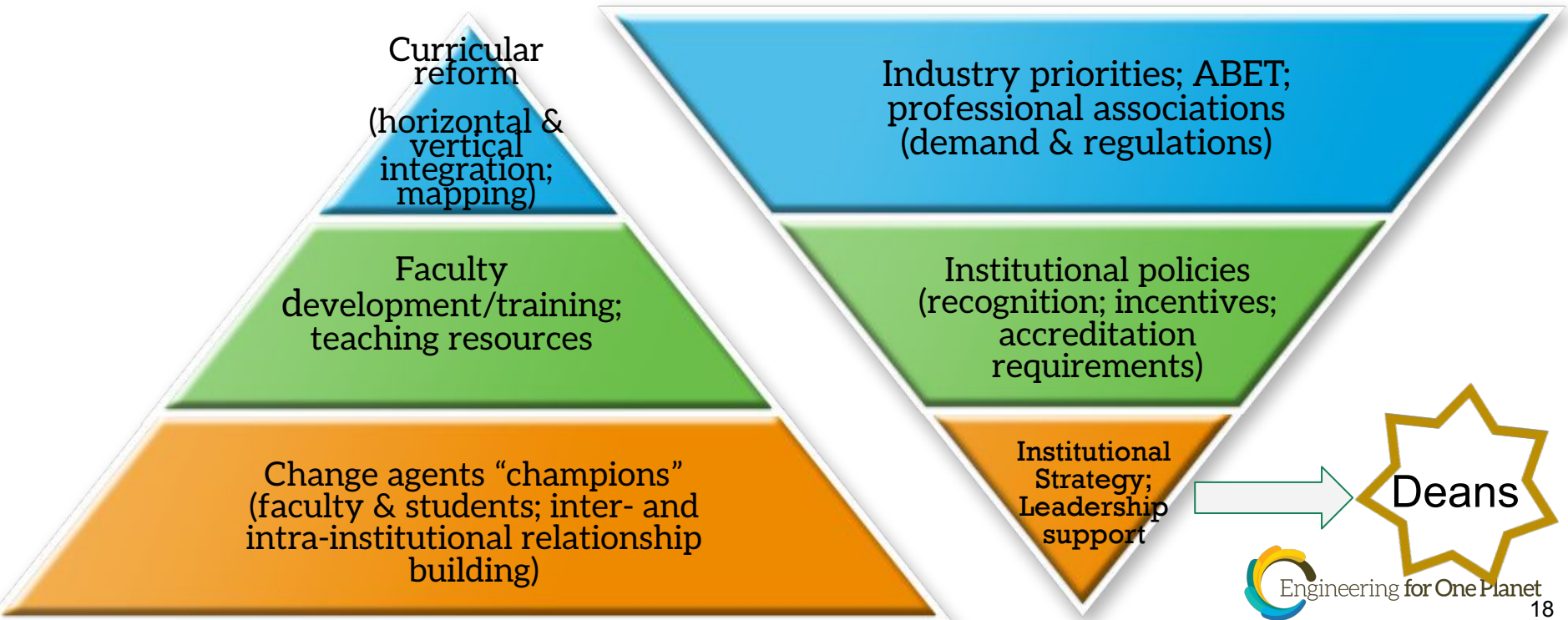
Sustainability is....

- Required for a livable planet
 - The science is clear
- Required by ABET accreditation
 - Explicitly stated in Criteria 3, Student Outcomes 2 & 4
- An imperative for students
- An imperative for government and industry
 - Demand for sustainability skills across functions will soon outpace supply

Engineering education has massive scope, scale and reach.

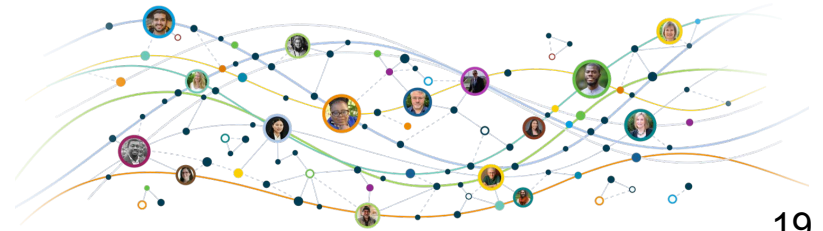
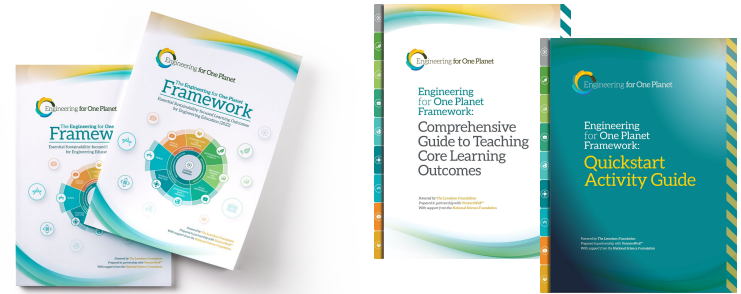
- 140,000 undergrad engineering degrees are awarded each year in the U.S.
- ~1200 environmental engineering BAs awarded/year (less than 1%)

Both bottom-up and top-down approaches are needed to transform engineering education – especially leadership support



Three Interrelated Approaches to Catalyze Systems Change

1. ABET-aligned tools for teaching and assessment – **EOP Framework** of **core learning outcomes & companion “how-to” teaching guides**
2. Grants, mentorship, communities of practice for supporting curricular change
 - **33 grantees to date**
 - **Over 100 faculty using EOP Framework**
 - **<https://eop-mgp.asee.org/>**
3. Supporting an impact network for collaboration among industry, academia, philanthropy, nonprofit, government





Your voice is needed!

Sign up as a signatory: www.EngineeringforOnePlanet.org

Learn more and share your thoughts: CindyC@lemelson.org

Together we can go from changing engineering courses, to
changing the course of engineering.





EDI

SAN JUAN | CARIBE HILTON
PUERTO RICO

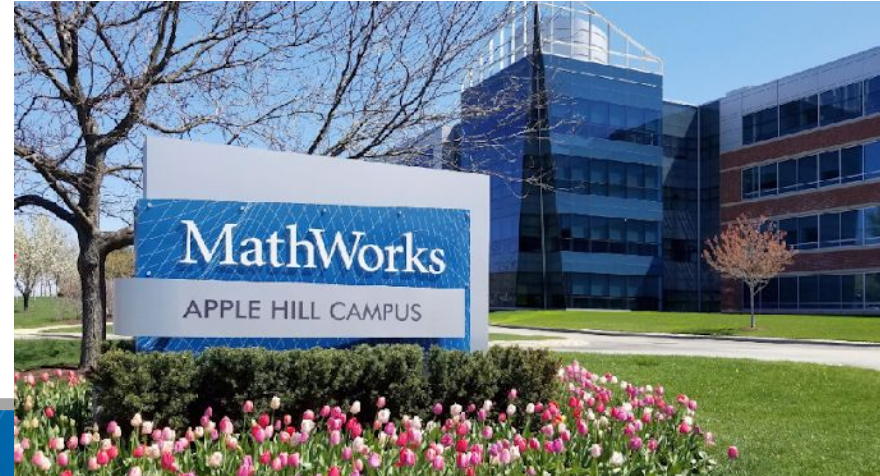
April 16th - 19th, 2023



Reimagining Engineering Careers

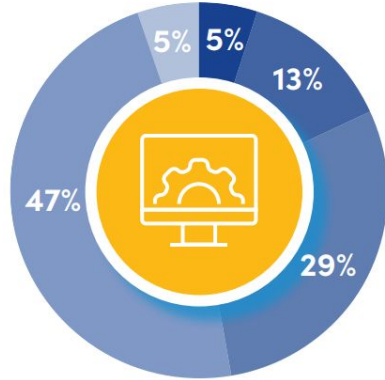
ASEE-EDI

P.J. Boardman
Director, STEM Outreach and Workforce Development
MathWorks

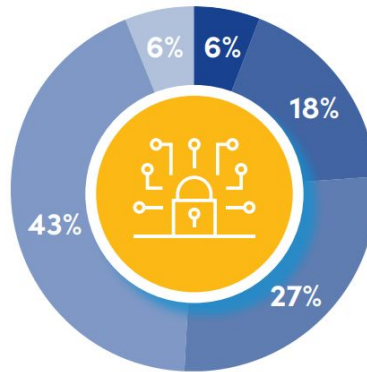


ASEE Corporate Member Survey- Skills Gaps

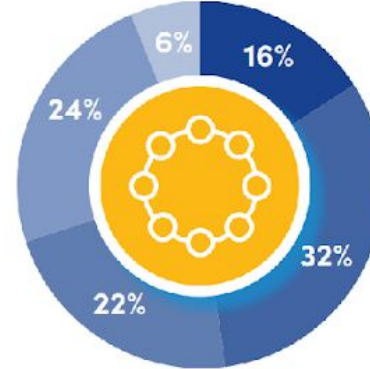
Artificial Intelligence



Robotics



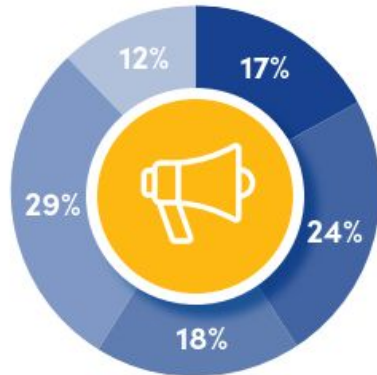
Model-Based Systems Engineering



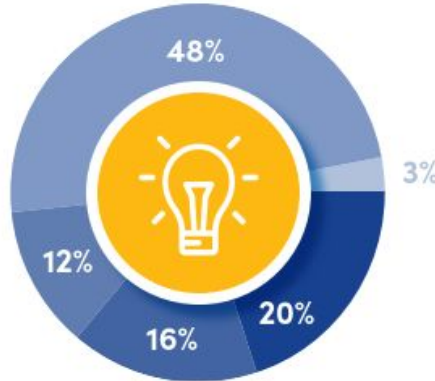
KEY

- VERY PREPARED
- SOMEWHAT PREPARED
- VERY LITTLE PREPARATION
- NOT PREPARED AT ALL
- GAINED SKILL AFTER GRADUATION

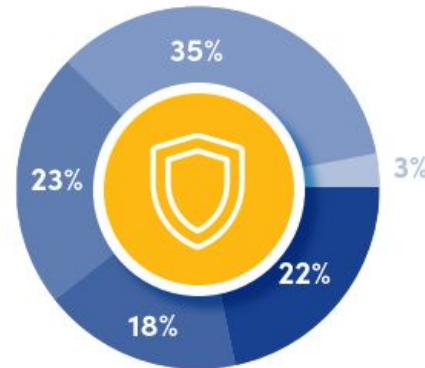
Project management



Critical Thinking



High ethical standards, integrity, and global, social, intellectual, and technological responsibility



Technical Skills

Professional Skills

“Everyone who comes in as a new hire already knows MATLAB, because **they all had it in college**. The learning curve is significantly lessened as a result.”

Jeff Corn, Chief of Engineering Projects Section
U.S. Air Force



Building the Workforce of Tomorrow



6500+

colleges and universities
teach our software



5 million+

users in over 190 countries



100,000+

businesses, governments,
and universities



EDI

SAN JUAN | CARIBE HILTON
PUERTO RICO

April 16th - 19th, 2023



“Everyone who comes in as a new hire already knows MATLAB, because **they all had it in college**. The learning curve is significantly lessened as a result.”

Jeff Corn, Chief of Engineering Projects Section
U.S. Air Force



Building the Workforce of Tomorrow

1. Online Training, Virtual Labs, & Capstone Projects
2. Student Competitions & Hackathons
3. Student Ambassadors, Internships & Engineering Development



6500+

colleges and universities
teach our software



5 million+

users in over 190 countries



100,000+

businesses, governments,
and universities

Preparing Future Engineers

1. Online Training, Virtual Labs,& Capstone Projects
2. 70+ Student Competitions (5K Teams) & Hackathons
3. Student Ambassadors (140+), Internships (450+) & Engineering Development Group (EDG) (450+)

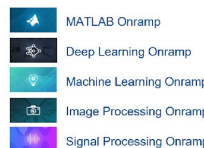


Leah

University at Buffalo

"I applied to be a MATLAB Student Ambassador because I wanted to hone my own MATLAB skills. They say that teaching is the best way to learn!"

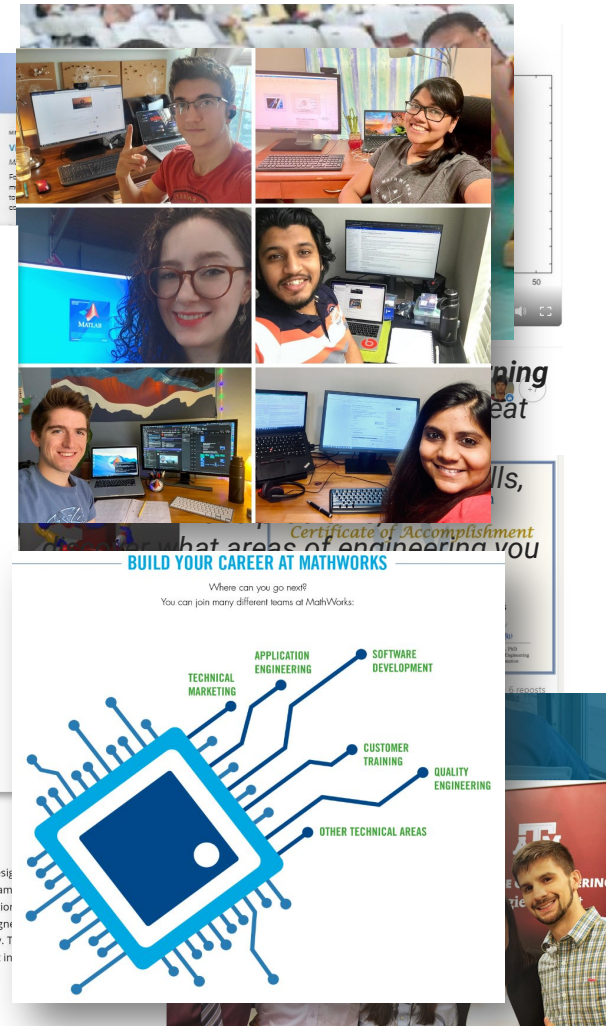
Get Started with MATLAB



Solving Problems in 48 Hours

Aggies Invent is a 48-hour intensive design where students in multidisciplinary team innovation, creativity and communication event has a specific theme and is designed in collaboration with industry and faculty. Teams compete for cash awards and the best idea.

About the Program >



Join us in Building the Workforce of Tomorrow

MATLAB EXPO

May 10–11, 2023 | Online

Register

The event is free, but registration is required.

Questions?

pboardma@mathworks.com

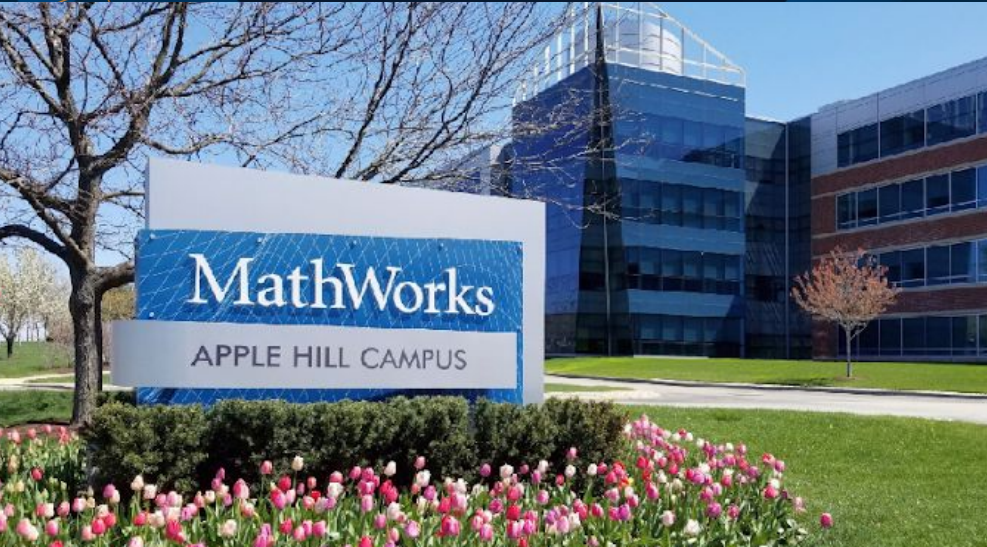
www.linkedin.com/in/pjboardman/



Learn more here:

www.mathworks.com/careers

www.mathworks.com





EDI

SAN JUAN | CARIBE HILTON
PUERTO RICO

April 16th - 19th, 2023



WELCOME TO

CREATIVE TENSIONS

— EXAMPLE PROMPT —

Conferences are for



Content



Connections



**We should make it
as easy as possible
for EMPLOYERS to
recruit CEC students
in whatever way
works best for them.**



**We should have
very high standards
for how EMPLOYERS
engage with
students on our
campus.**





**Students should
know exactly where
to go to get help
with their career
readiness path.**



**Students should
learn the mindsets
they need to forge
their own path to
career readiness.**

— EXAMPLE PROMPT —

Conferences are for



Content

PLAY

Connections



THANK YOU!



EVA MEJIA, Ed.L.D.

Executive Director
Learning & Work Practice
emejia@ideo.com

FIU | FLORIDA
INTERNATIONAL
UNIVERSITY + **IDEO**



EDI

SAN JUAN | CARIBE HILTON
PUERTO RICO

April 16th - 19th, 2023

