Vaasan yliopisto
UNIVERSITY OF VAASA

Stony Brook University

Globelics Academy 2022

Community Engagement and

Broader Impacts of Research

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Community Engagement

What is community engagement?

- In your teams, discuss why (or why not) each photo represents community engagement
- According to your team, which picture best represents community engagement and which picture least represents community engagement.

1

2

3

4

5

6

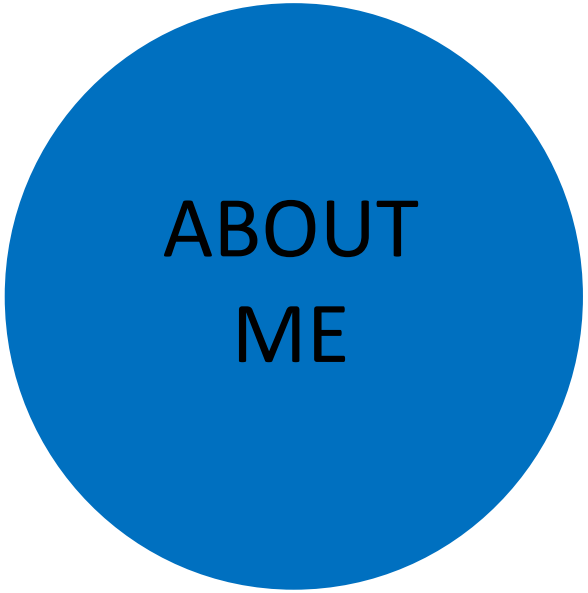
7

8

9

10

11


ABOUT
ME

Electrical Engineering

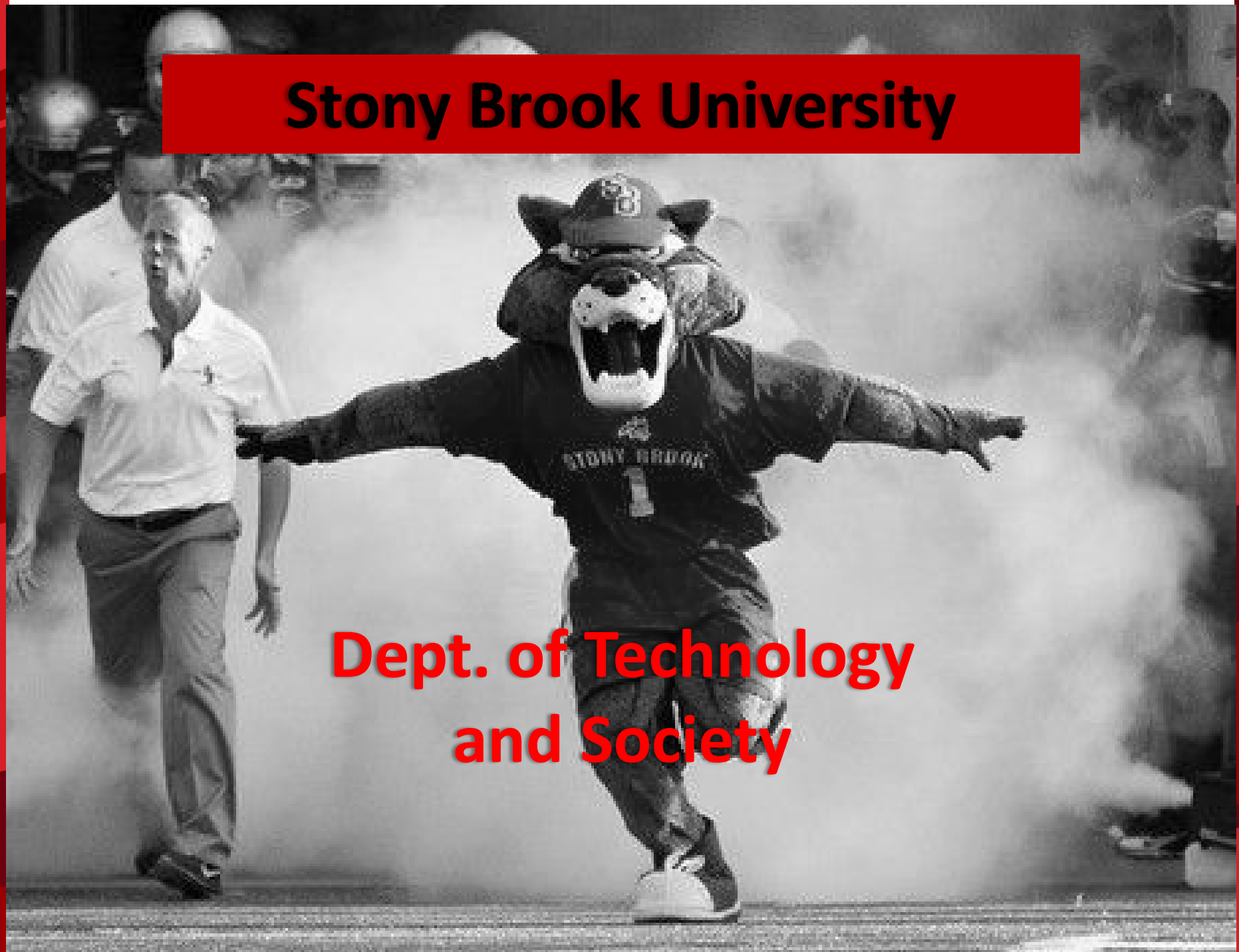
Princeton University

Georgia Tech

Public Policy

Georgia Tech

Stony Brook University



Dept. of Technology and Society

About Stony Brook

Department of Technology and Society

- College of Engineering and Applied Sciences
- Bachelors
  - Technological Systems Management
- Master's degree
  - Technological Systems Management
- PhD
  - Technology, Policy and Innovation Policy

Wolfie the Seawolf

Vaasan yliopisto
UNIVERSITY OF VAASA

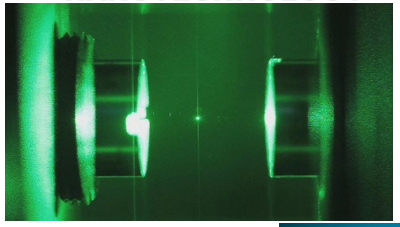
InnoLab

VILLAGE CHURCH

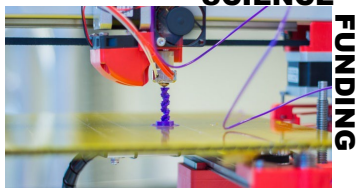
PEP
Education is Liberation

2iE Institut International d'Ingénierie de l'Eau et de l'Environnement

NANOTECHNOLOGY



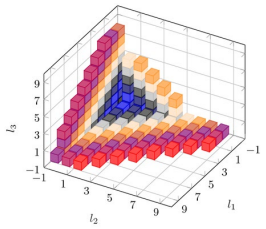
SCIENCE



FUNDING

INCLUSIVE INNOVATION

BIG



DATA

STEM

DIVERSITY

CENTRE VALBIO

TURKANA BASIN INSTITUTE

We have global challenges

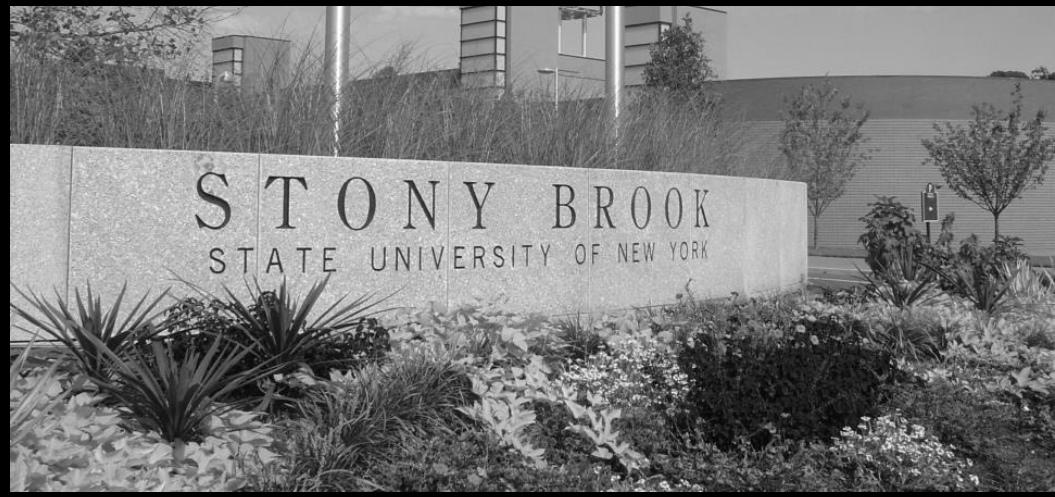
Climate Change
Inequality
War
Pollution
Privacy
…

Inclusive Innovation

We cannot solve global challenges with solution created in wealthy countries, by wealthy scientists for wealthy people.

Susan Cozzens, Jameson Wetmore, Michael Bernstein, Rafael Castillo, Diran Soumonni, Matthew Harsh

Addressing the Community Engagement Gap in Engineering Education: A Short-Course Approach



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Educating engineers for community development

Cape Town, April 2014

No engagement training in most technical programs

Engineers define/fix problems

Environmental Nano Group,
University of Western Cape, 2011

Ten Lessons

1. Reflect on your motivation, existing knowledge and training
2. Strive to understand community context before starting any technical work
3. Act with the community
4. Build capacities and empower community members
5. 'De-center technology'
6. Keep power differentials in mind
7. Strive for equitable process and outcomes
8. Think about structural issues surrounding your work
9. Assess often
10. Effective engagement takes time

Nieusma, D., & Riley, D. (2010). Designs on development: engineering, globalization, and social justice. *Engineering Studies*, *2*(1), 29-59.

Broader Impacts of R&D

https://ec.europa.eu/programmes/horizon2020/en/h2020-section/responsible-research-innovation

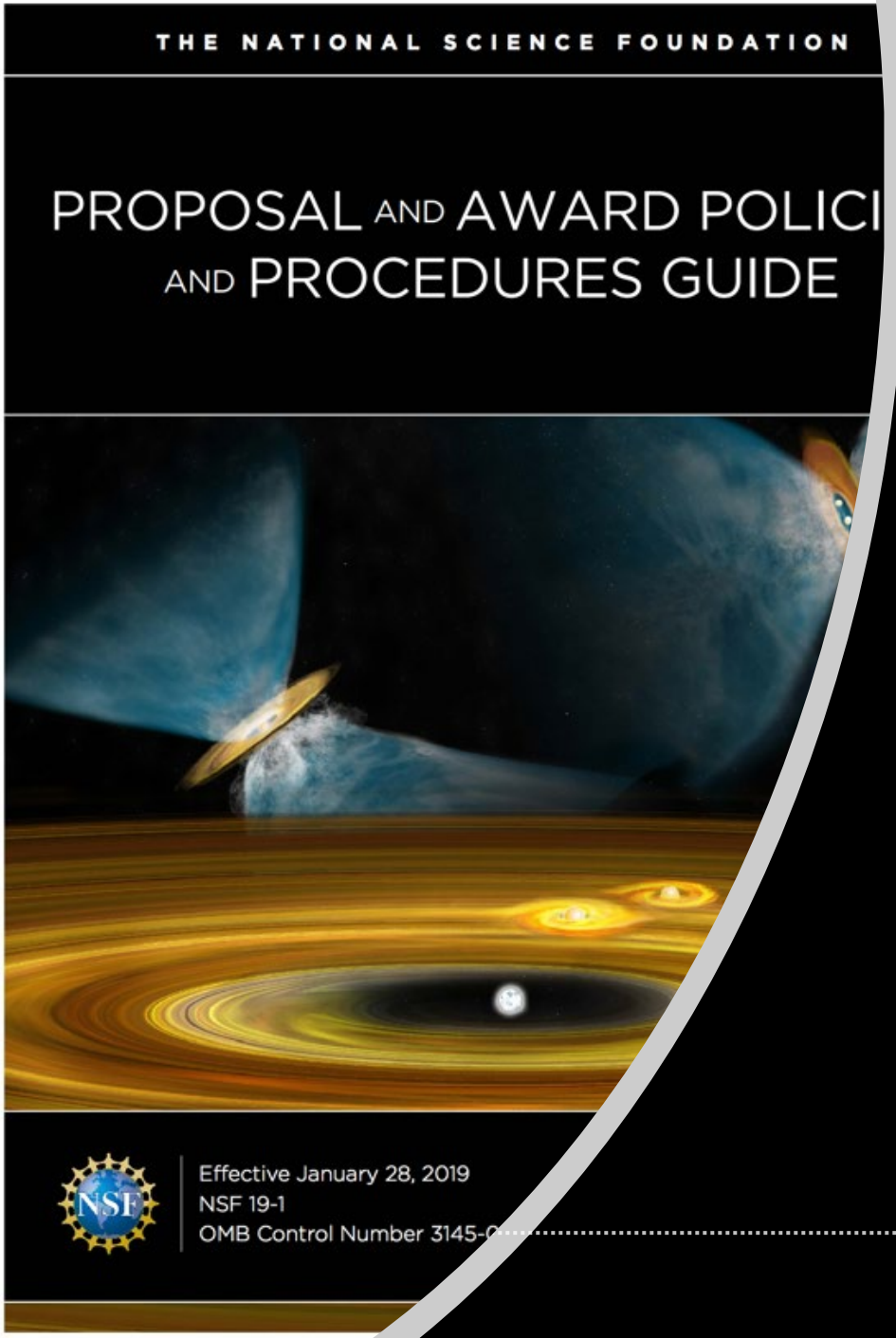
Responsible Research and Innovation

"… is an approach that anticipates and assesses potential implications and societal expectations with regard to research and innovation, with the aim to foster the design of inclusive and sustainable research and innovation."

Responsible Research

Promoting responsible research at
The Federation of Finnish Learned Societies

Responsible research promotes reliable and collectively accepted practices of producing, publishing, and assessing research results. It supports the transparency, presence, and utilization of science in society.



Broader Impact Criterion (BIC)

-NSF grant required broader impacts in 1997

-American COMPETES Reauthorization Act of 2010 mandated BIC

"Broader Impacts: The Broader Impacts criterion encompasses the potential to benefit society and contribute to the achievement of specific, desired societal outcomes." (NSF, 2018)

Complaints with societal impacts

Vague and ambiguous standards

Harder to get grants (especially for junior scholars)

Agencies should not consider broader impacts when judging science. Focus on the intellectual merit

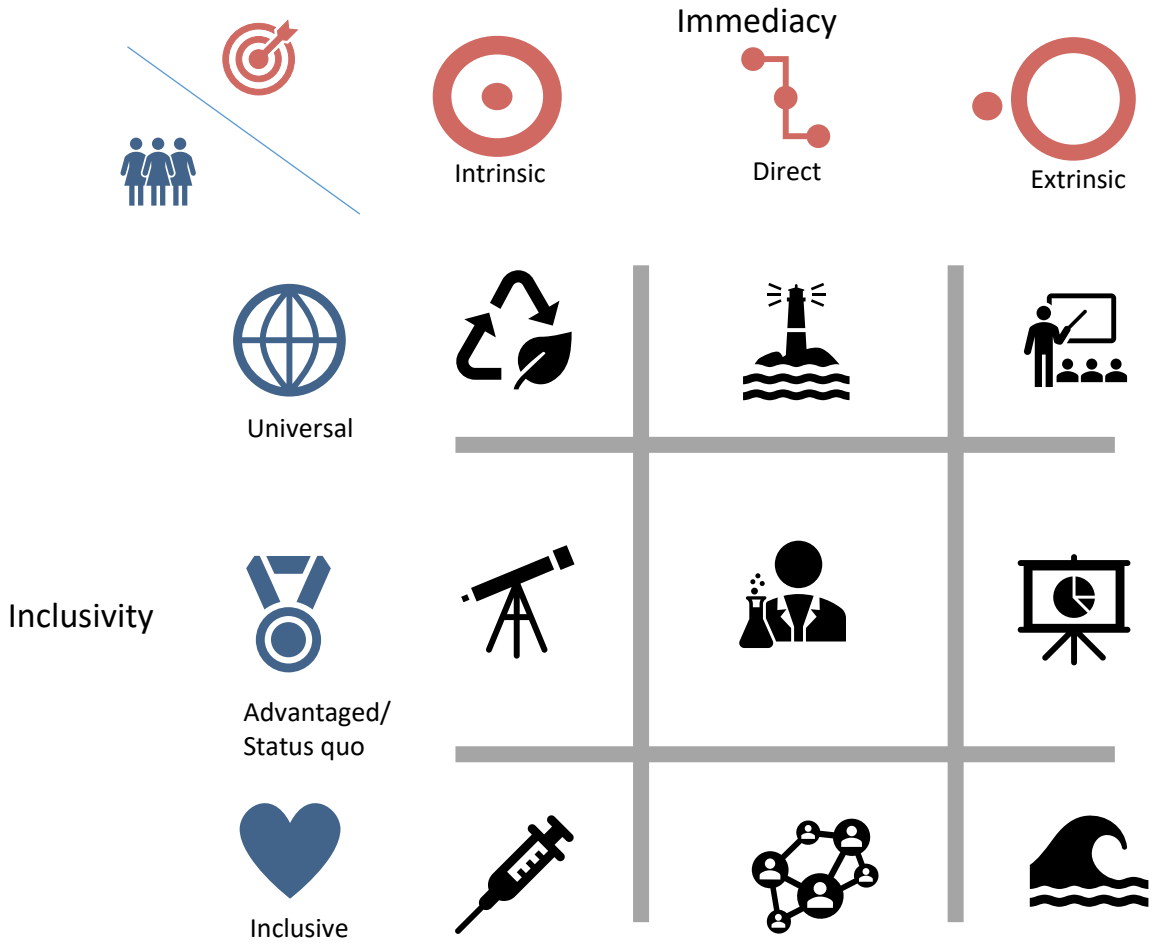
We don’t know the value of future science. (look at Bohr’s discovery)

Complaints with societal impacts

Broader impacts based on flawed linear model

Peer review is a bad way to assess value (no experts in the room)

Inefficient use of money



Thomas Woodson, Sophia Boutilier, Impacts for whom? Assessing inequalities in NSF-funded broader impacts using the Inclusion-Immediacy Criterion, *Science and Public Policy*, Volume 49, Issue 2, April 2022, Pages 168–178, https://doi.org/10.1093/scipol/scab072

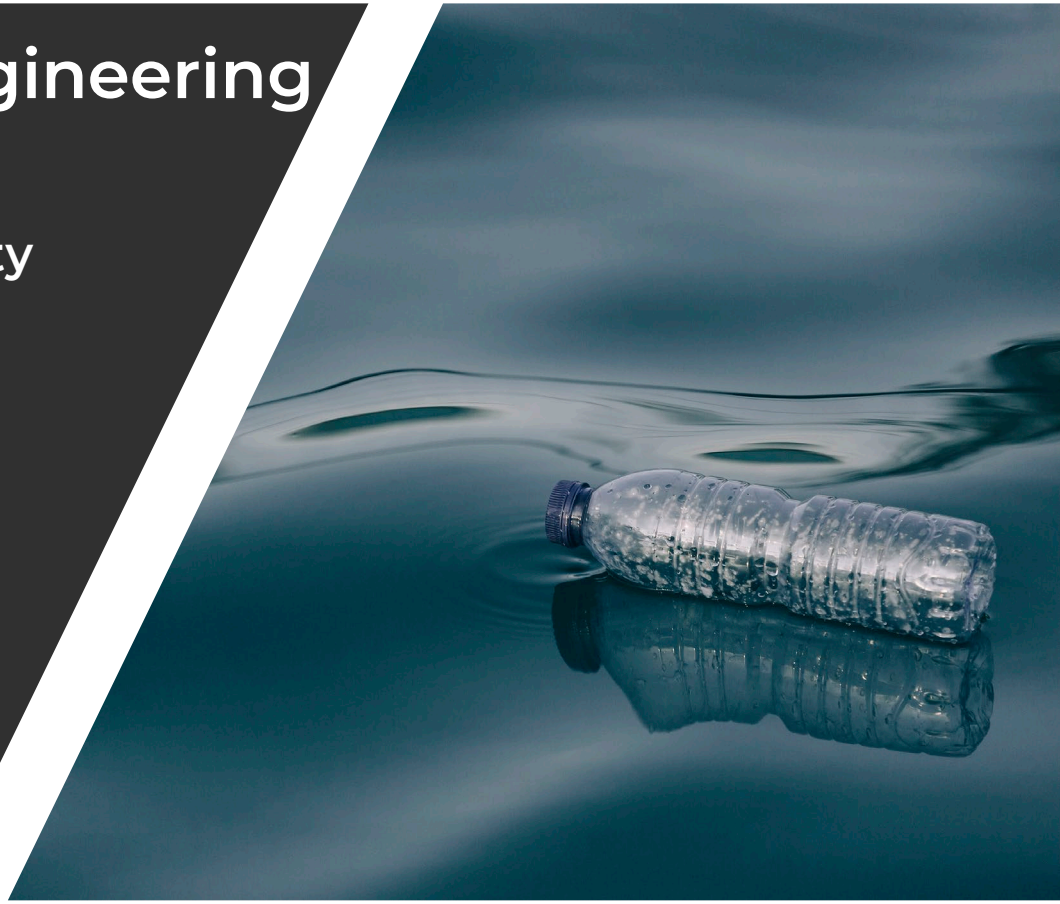
Broader Impacts of Engineering

NSF Division: Environmental Engineering and Sustainability

"Nature-Based Solutions for Restoring Rivers and Streams"

Xiaofeng Liu, Penn State Univ.

Award #1935243



Broader Impacts of Engineering

NSF Division: Electrical, Communications and Cyber Systems (ECCS)

"CAREER: Reliability and Resilience Assurance of Cyber-Physical Energy Systems"

Mohammed Ben-Idris

Univ. of Nevada, Reno

Award # 1847578

Overlooked impacts

Teaching

Collaborations

Training students

Science infrastructure