

## The Minimization of Microaggressions in Engineering Education

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Dr. Darryl A. Dickerson is an Assistant Professor of Mechanical and Materials Engineering at Florida International University (FIU). Dr. Dickerson's research focuses on transforming multiscale mechanobiological insights into biomanufacturing processes enabling the creation of personalized, fully functional engineered tissues. His research group, the Inclusive Complex Tissue Regeneration Lab (InCTRL), does this through multiscale characterization of complex tissues, fundamental studies on biophysical control of induced pluripotent stem cells, biomaterial development for complex tissue regeneration, and intentionally building inclusion into research design and execution. This connects to his broader vision to make engineering spaces more diverse, more equitable, and more inclusive. He has held administrative positions in programs to broaden the participation of historically excluded students in engineering. Dr. Dickerson's work in expanding participation in engineering has yielded significant programmatic interventions, institutional change activities, and national strategic initiatives. He also serves as the Director of Engineering Workforce and Education for the CELL-MET ERC. Dr. Dickerson manages the K-12 outreach and research experiences for high school students, teachers, and undergraduates in this role.

**Dr. Alice L Pawley, Purdue University at West Lafayette (COE)**

Alice Pawley (she, her, hers) is a Professor in the School of Engineering Education and an affiliate faculty member in the Women's, Gender, and Sexuality Studies Program, Environmental and Ecological Engineering, and the Purdue Climate Change Research Center at Purdue University. She was co-PI of Purdue's ADVANCE program from 2008-2014, focusing on the underrepresentation of women in STEM faculty positions. She runs the Feminist Research in Engineering Education Group, whose diverse projects and group members are described at [pawleyresearch.org](http://pawleyresearch.org). She was a National Academy of Engineering CASEE Fellow in 2007, received a CAREER award in 2010 and a PECASE award in 2012 for her project researching the stories of undergraduate engineering women and men of color and white women, and received the Denice Denton Emerging Leader award from the Anita Borg Institute in 2013. She has been author or co-author on papers receiving ASEE-ERM's best paper award, the AAEE Best Paper Award, the Benjamin Dasher award, and co-authored the paper nominated by the ASEE Committee on Diversity, Equity, and Inclusion for ASEE Best PIC Paper for 2018. More recently, she received her school's Award for Excellence in Mentoring, the Award for Leadership, and a 2019 award from the College of Engineering as an Outstanding Faculty Mentor of Engineering Graduate Students. In 2020 she won the Sterling Olmsted Award from the Liberal Education/Engineering and Society Division of ASEE. She is president of Purdue's chapter of the American Association of University Professors (2020-22). She helped found, fund, and grow the PEER Collaborative, a peer mentoring group of early career and recently tenured faculty and research staff primarily evaluated based on their engineering education research productivity. She can be contacted by email at [apawley@purdue.edu](mailto:apawley@purdue.edu).

**Dr. Matthew W. Ohland, Purdue University at West Lafayette (COE)**

Matthew W. Ohland is Associate Head and the Dale and Suzi Gallagher of Professor of Engineering Education at Purdue University. He has degrees from Swarthmore College, Rensselaer Polytechnic Institute, and the University of Florida. His research on the longitudinal study of engineering students, team assignment, peer evaluation, and active and collaborative teaching methods has been supported by the National Science Foundation and the Sloan Foundation and his team received for the best paper published in the Journal of Engineering Education in 2008, 2011, and 2019 and from the IEEE Transactions on Education in 2011 and 2015. Dr. Ohland is an ABET Program Evaluator for ASEE. He was the 2002–2006 President of Tau Beta Pi and is a Fellow of the ASEE, IEEE, and AAAS.

# *THE MINIMIZATION OF MICRO IN ENGINEERING EDUCATION*

Stephanie Masta, Darryl Dickerson, Alice Pawley, Matthew Ohland

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# Acknowledgement of Territory

Purdue is on the unceded territory of the Kiikaapoi (Kickapoo), Peoria, Kaskaskia, Bodéwadmikiwen (Potawatomi), and Myaamia people.



Opinion

## Ask Who Paid for America's Universities

Cornell, Virginia Tech, Ohio State and many more were created with wealth stolen from Indigenous people.

By **Tristan Ahtone** and **Robert Lee**

Mr. Ahtone is the editor in chief of The Texas Observer and a member of the Kiowa Tribe. Dr. Lee is a lecturer in American history at the University of Cambridge.

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# *H*MATTER

Identifying Marginalization and Allying Tendencies to Transform Engineering Relationships

# *Engineering student teams engaged in marginalizing against minoritized members.*

RQ1: What does marginalization look like within engineering classrooms where teamwork is a primary feature?

# *Methods*

Data were collected from March 2020-May 2020.

Interviews conducted by Co-PI and the graduate research assistant (both identify as marginalized) via Zoom.

Interviews were transcribed using third -party transcription service.

# *Participants*

All engineering majors

30 participants (23 women, 7 men)

Self-identified as marginalized

Included international students who attended HS in U.S.

Varied racial representation

# *Microaggressions*

Commonplace verbal, behavioral, or environmental interactions that have a detrimental affect on marginalized people.



# *Forms of Microaggression*

Insincere Concern

Gendered/Racialized “Observations”

Lowered Expectations

# *Forms of Microaggression*

Insincere concern microaggressions involve white teammates expressing “concern” for the workload of Brown and Black students, and using that concern to exclude Brown and Black students from group work.

# *Forms of Microaggression*

Racialized observation microaggressions occur when white teammates make specific comments to Brown and Black students about race as a form of “observation.”

Gendered observation microaggressions occur when men\* make specific comments to women about their gender as a form of “observation.”

# *Forms of Microaggression*

Low expectations microaggressions occur when men have lower or different expectations for their women teammates. Related, men often dismissed the expertise of their women teammates.

# *Minimization of Microaggressions*

While participants could identify microaggressions, they often minimized or dismissed microaggressive behavior in multiple ways.

# *What Next ?*

How can we reduce microaggressions that occur in teams?

## *Thank you questions?*

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