

## **Panel Discussion: Rethinking First-Year Engineering: Management, Collaboration, and Curriculum Alignment**

### **Prof. Cory Budischak, Temple University**

Dr. Cory Budischak, Associate Professor of Instruction at Temple University, focuses on transitioning to 100% renewable energy and advocacy for policy implementation at state and national levels. He's part of Delaware's GEAC, aiming to halve emissions by 2030 and eliminate them by 2050. Budischak champions a holistic view of energy systems in order to most effectively transition to a low carbon economy. A proponent of innovative teaching methods like flipped classroom problem based learning and design thinking, he also co-founded the STEPS program (funded through NSF S-STEM) to support low-income, high-achieving engineering students. Budischak holds a Doctorate in Electrical Engineering and enjoys outdoor activities with his family.

### **Dr. Haritha Malladi, University of Delaware**

Haritha Malladi is an Assistant Professor of Civil and Environmental Engineering and the Director of First-Year Engineering at the University of Delaware. She received her Bachelor of Technology degree in Civil Engineering from National Institute of Technology, Warangal, India, and her MS and PhD in Civil Engineering from North Carolina State University. She is a teacher-scholar working in the intersection of undergraduate engineering education, sustainable infrastructure, and community engagement. She teaches the introductory engineering course for all first-year undergraduate students in the College of Engineering at UD. Her undergraduate teaching experience includes foundational engineering mechanics courses like statics and strength of materials as well as courses related to sustainability and infrastructure. Her research interests are in foundational engineering education, sustainability in engineering curriculum, and green technologies in infrastructure.

### **Prof. Brian Patrick O'Connell, Northeastern University**

Dr. O'Connell is an associate teaching professor in the First-Year Engineering program at Northeastern University. He studied at the University of Massachusetts at Amherst in 2006 then worked in industry as a Mechanical Engineer working on ruggedized submarine optronic systems. He returned to academia in 2011 at Tufts University planning to work towards more advanced R&D but fell for engineering education and educational technologies. His research now focuses on developing engineering technologies and learning environments, specifically makerspaces, to support engineering education at many levels. He's also heavily involved with his local FIRST Robotics Challenge team as a mentor.

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### **Panelists:**

Dr. Cory Budischak (Temple University)

Dr. Haritha Malladi (University of Delaware)

Dr. Brian O'Connell (Northeastern University)

### **Description:**

Many conversations focus on the pedagogy and learning objectives of first-year engineering courses, but just as important is how these courses are managed. This this panel discussion, we would like to discuss and generate a conversation in the community around the main question: What would the ideal management structure for a first-year engineering program look like? Things to consider are:

1. How should the first year be systematically improved and what feedback mechanisms should be employed? What stakeholders should be consulted (math/science/engineering faculty, academic advisors, student life/housing, etc.)?
2. Should the courses be run by a certain department or some other administrative structure? If other, what should it look like?
3. Should students be strategically enrolled in sections somehow (e.g., by math course, living learning community, other ways?)
4. How should instructors be chosen for these courses? Should instructors be hired to teach in the first year specifically? What other responsibilities, if any, should these faculty have for the first-year experience?

The panelists will share experiences from their respective institutions with respect to the above questions. They will also share their thoughts on improvements needed in the first-year programs. The remainder of the time will be an interactive discussion with the audience members to gather more perspectives on first-year program structures across various institutions.