

## 5TH BIOMEDICAL ENGINEERING EDUCATIONAL SUMMIT

*Building diversity in the biomedical engineering workforce spanning academia to industry*

**MAY 29 - 31, 2024**

**New Jersey Institute of Technology, Newark, NJ**



*Campus Center, New Jersey Institute of Technology*



# 5th Biomedical Engineering Educational Summit

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## ORGANIZING COMMITTEE

### Conference Co-Chairs

Bryan Pfister, PhD, New Jersey Institute of Technology  
Christopher Wagner, PhD, The College of New Jersey  
Jennifer Kang-Mieler, PhD, Stevens Institute of Technology  
Andreas Hielscher, PhD, New York University

### Program Committee

Jonathan Grasman, PhD, New Jersey Institute of Technology  
Connie Hall, PhD, The College of New Jersey  
Sally Shady, PhD, Stevens Institute of Technology  
Rose Faghih, PhD, New York University  
Jennifer Amos, PhD, University of Illinois Urbana-Champaign  
Alev Erdi, PhD, New Jersey Institute of Technology  
Treena Arinzeh, PhD, Columbia University  
Sarah Rooney, PhD, University of Delaware

Conference Website

<https://biomedical.njit.edu/fifth-biomedical-engineering-education-summit>

For information email:

[bme@njit.edu](mailto:bme@njit.edu)

## Summit Objective

Evaluate our collective goals for biomedical engineering and to develop approaches to our challenges as we navigate an evolving student population with different teaching, motivational and support needs. Building diversity in the biomedical engineering workforce will be a focus and integrated throughout the program.

## Summit Program Format

The Summit is organized into 4 half-day themes. Each theme will begin with an opening expert plenary speaker followed by six parallel workshop sessions where each working group will explore, discuss, and make recommendations. The workshops will be repeated so that each attendee can participate in three topic sessions.

## Summit Outcomes

- Participating in this Summit you will:
  - Define and refine the leading opportunities and challenges facing BME educational programs
  - Share your experiences with colleagues
  - Develop and propose approaches and solutions to the top issues
  - Take away ideas and strategies mastered by other programs
- To capture the discussions and conclusions from workshops to disseminate post-conference to attendees
- Broadly disseminate the accomplishments of the Summit in engineering education publications.

## Summit Location

Newark, New Jersey is located in close proximity to Newark International Airport, Amtrak's Northeast Corridor, Newark Pennsylvania Station, and less than a 20-minute commute from Manhattan, NYC. The NJIT campus is a few miles off Interstate 95, the NJ turnpike, and has ample on-campus parking available for free. There are many hotels close to NJIT campus, several in walking distance or a short light rail ride to the center of campus.



*Stevens Institute of Technology*

## Special Event

May 30 - Dinner at Stevens Institute of Technology overlooking the Hudson River and Manhattan, NY.

**Summit Registration:** Registration and hotel booking will open in December 2023.

**Travel Awards:** Apply for travel awards, for information please see the Summit Website.

11:00 - 1:00 **Registration Open**

1:00 - 2:00 **Summit Welcome and Keynote Speaker; *Sunita Mishra, MD, MBA, Chief Medical Officer for Amazon Health Services***

***Theme 1: Update on strategies for enhanced learning environments and evidence based practices in undergraduate programs.***

2:00 - 2:45 **Theme Plenary Speaker; *Maribel Vazquez, PhD, Professor, Biomedical Engineering, Rutgers University***

2:45 - 3:00 **Coffee Break**

3:00 - 3:50 **Parallel Workshop Sessions**

**1:** The evolution of teaching and learning styles in the post-pandemic era.

**Session Chairs:** Sally Shady, PhD, Associate Professor and Associate Chair of Undergraduate Studies, Biomedical Engineering, Stevens Institute of Technology. Mahendra Kavdia., PhD, Undergraduate Program Chair and Associate Professor, Wayne State University.

**2:** Effective learning and teaching strategies in small and large classrooms.

(Adopting instructional approaches in BME-specific courses such as: Introduction to BME, Physiology, Biomechanics and Biotransport).

**Session Chairs:** Christine King, PhD, Associate Professor, Dir. of the Biomedical Engineering Meng Program, University of California Irvine. Laura Christian, PhD, Lecturer, Coulter Dept of Biomedical Engineering, Georgia Institute of Technology.

**2:** Incorporating DEI into instruction and interpreting the new ABET criteria

**Session Chairs:** Jennifer Leight, PhD, Professional Practice Associate Professor and Associate Director of Undergraduate Education, Dept of Biomedical Engineering, The Ohio State University. Alyssa Taylor Amos, PhD, Associate Teaching Professor, Shu Chien-Gen Lay Dept of Bioengineering, University California San Diego.

**4:** Strategies to incorporate ChatGPT/AI in BME curriculum.

**Session Chairs:** Alexandra Werth, PhD, Assistant Professor, Meining School of Biomedical Engineering, Cornell University. **Mike King, PhD, Rice University.**

**5:** Approaches and innovative techniques to teach senior design.

**Session Chairs:** Rebecca Scott, PhD, Assistant Professor of Biomedical Engineering, University of Oklahoma. Joseph J. Sarver, PhD, Teaching Professor, School of Biomedical Engineering, Science & Health Systems, Drexel University.

**6:** Opportunities for experiential learning in the BME curriculum.

**Session Chairs:** Alexander Guevel, PhD, Assistant Professor, VT-WFU School of Biomedical Engineering and Sciences, Wake Forest University School of Medicine. Rob Macleod, PhD, Professor, Vice-chair, and Dir. Of Undergraduate Studies, Dept of Biomedical Engineering, University of Utah.

*All workshop sessions will be repeated so that you can attend 3 of the topics.*

- 4:00 - 4:50    **Parallel Sessions Repeat I**
- 5:00 - 5:50    **Parallel Sessions Repeat II**
- 6:30 - 8:30    **Dinner at NJIT - Opening Reception**
- 8:30 - 10:00   **Social/Networking Activity**

## Thursday, May 30

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7:00 - 8:00    **Breakfast**

***Theme 2: Resources for student and faculty success.***

8:00 - 8:45    **Theme Plenary Speaker: *Kay C. Dee, PhD, Associate Dean of Learning and Technology and Professor of Biology and Biomedical Engineering, Rose-Hulman Institute of Technology.***

9:00 - 9:50    **Parallel Workshop Sessions**

**1:** Student engagement, participation, and attendance.

**Session Chairs:** Joshua Kays, PhD, Lecturer, College of Engineering, Department of Biomedical Engineering, Boston University. Sarah Rooney, PhD, Associate Professor, Department of Biomedical Engineering, University of Delaware.

**2:** Academic integrity and use of ChatGPT in BME curricula (focus on communicating restrictions and conveying when crossing into academic integrity violations - role of faculty in integrity investigations).

**Session Chairs:** Reem Khojah, PhD, Assistant Teaching Professor, Shu Chien-Gene Lay Department of Bioengineering, University of California San Diego. Kelly W. Broadhead, PhD, Associate Professor (Lecturer) and Director of Undergraduate Operations, Department of Biomedical Engineering, University of Utah.

**3:** Promoting instructional and TT faculty success, professional training, and individual mentorship.

**Session Chairs:** Brenda Ogle, PhD, Professor and Department Head, Department of Biomedical Engineering, University of Minnesota Twin Cities. Jenny Amos, Teaching Professor, Grainer College of Engineering, University of Illinois Urbana Champaign.

**4:** Models for regional programs to work together more closely, including shared resources and collaborative teaching.

**Session Chairs:** Miiri Kotche, PhD, Associate Dean for Undergraduate Affairs, Clinical Professor, Biomedical Engineering University of Illinois Chicago. Pat Alford, PhD, Associate Professor and Director of Undergraduate Studies, Department of Biomedical Engineering, University of Minnesota Twin Cities.

**5:** Student support: Mental health and sense of belonging while maintaining educational rigor and curricular success.

**Session Chairs:** Karin Jensen, PhD, Assistant Professor, Biomedical Engineering, University of Michigan. Kristen Labbazzo, PhD, Associate Teaching Professor, Undergraduate Director Biomedical Engineering, Rutgers University, New Brunswick.

**6:** Promotion and acceptance of inclusion; University training to departmental engagement – student advising to faculty mentorship.

**Session Chairs:** Julian Lippmann, PhD, Lecturer, College of Engineering, University of Miami. Lauren Hecklman, PhD, Lecturer, Department of Biomedical Engineering, Columbia University.

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10:00 - 10:50 **Parallel Sessions Repeat I**

11:00 - 11:50 **Parallel Sessions Repeat II**

12:00 - 1:00 **Networking Lunch**

## Thursday, May 30

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### ***Theme 3: The future of graduate programs in biomedical engineering.***

1:00 - 1:45 ***Theme Plenary Speaker; Soumyadipta Acharya, MD, MSE, PhD, Assistant Professor, Biomedical Engineering, Johns Hopkins University.***

2:00 - 2:50 **Parallel Workshop Sessions**

**1:** Structures for interdisciplinary co-mentored research training that bridges biology, engineering, computer and data science chemistry, and medicine.

**Session Chairs:** David Schmidtke, PhD, Professor, Professor of Biomedical Engineering, University of Texas at Dallas. Michael Miga, PhD, Interim Chair, Professor, Vanderbilt University.

**2:** Preparing students for academic post-PhD careers in the AI era.

**Session Chairs:** Chris Geiger, PhD, Instructional Associate Professor, University of Florida. Wawosz Dobrucki, PhD, Associate Professor, Associate Head of Graduate Programs, Grainger College of Engineering, University of Illinois Urbana-Champaign.

**3:** Integration of entrepreneurship and commercialization training in graduate BME curricula.

**Session Chairs:** Katherine Reuther, PhD, Practice Associate Professor, University of Pennsylvania. Joe Bradley, PhD, Clinical Assistant Professor Grainger College of Engineering, University of Illinois Urbana-Champaign.

**4:** Industry and multi-institution interdisciplinary partnerships and their role in graduate BME curricula.

**Session Chairs:** Dhruv Seshadri, PhD, Assistant Professor, Department of Bioengineering, Lehigh University. Nathan Jacobs, PhD, Director of Research Training and Education, University of Oregon.

**5:** Discussions on the value-added proposition for BME Masters programs and views from industry.

**Session Chairs:** Anand Ramamurthi, PhD, Professor and Chair of the Department of Bioengineering, Lehigh University. Marissa Gray, PhD, Master's Program Director, Assistant Professor, Brown University.

**6:** Strategies to increase diversity and inclusion among students and faculty in graduate BME programs.

**Session Chairs:** Tomas Gonzalez-Fernandez, PhD, Assistant Professor, Department of Bioengineering, Lehigh University. Brian Helmke, PhD, Director of Undergraduate Research, Associate Professor, Department of Biomedical Engineering, University of Virginia.

*All workshop sessions will be repeated so that you can attend 3 of the topics.*

3:00 - 3:50 **Parallel Sessions Repeat I**



3:50 - 4:10 **Coffee Break**

4:10 - 5:00 **Parallel Sessions Repeat II**

5:00 - 6:30 **Buses to Stevens Institute of Technology**

6:30 - 10:00 **Dinner at Stevens Institute of Technology**

## Friday, May 31

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7:00 - 8:00     **Breakfast**

***Theme 4: Industry-readiness skills for an evolving and diversified job market.***

8:00 - 8:45     **Theme Plenary Speaker; *Arda Ural, PhD, Americas Industry Markets Leader for Life Sciences and Healthcare at Ernst & Young LLP.***

9:00 - 9:50     **Parallel Workshop Sessions**

**1:** What are the most critical industry readiness skills and are our programs designed to build upon these skills?

**Session Chairs:** Christian Rivera, PhD, Associate Professor of Instruction, Department of Bioengineering, University of Texas Dallas. Gabrielle Lam, PhD, Assistant Professor of Teaching, University of British Columbia.

**2:** The importance of data science in BME education.

**Session Chairs:** Lori Herz, PhD, Associate Chair, Teaching Professor, Department of Bioengineering, Lehigh University. Patricia Widder, PhD, Associate Director of Undergraduate Studies, Principal Lecturer, Department of Biomedical Engineering, Washington University in St. Louis.

**3:** Challenges with capstone experience to maximize workforce readiness and meet students' expectations.

**Session Chairs:** Holly Golecki, PhD, Teaching Assistant Professor, Grainer College of Engineering, University of Illinois Urbana Champaign. Laura Gaviria, PhD, Associate Professor of Instruction, Department of Biomedical Engineering, University of Texas San Antonio.

**4:** Integration of extra- and co-curricular topics to increase student employment success.

**Session Chairs:** Isgard Hueck, PhD, Director of Educational Assessment and Industrial Outreach in Biomedical Engineering, University of California San Diego. Kris Billiar, PhD, Department Head and Professor, Worcester Polytechnic Institute.

**5:** Benefits to the BME employers from specialized credentials or certifications such as Solidworks, "Grow with Google" or "Pathway for Patient Health."

**Session Chairs:** Novella Keeling, PhD, Teaching Assistant Professor, Biomedical Engineering Program University of Colorado Boulder. Ruth Ochia, PhD, Professor of Instruction, Bioengineering Department, Temple University.

**6:** Important topics and instructional approaches for preparing students for DEI in the workforce.

**Session Chairs:** Brian Helmke, PhD, Director of Undergraduate Research,

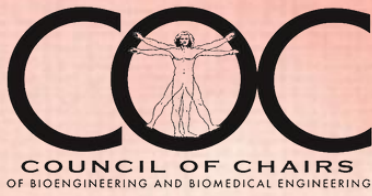
Associate Professor, Department of Biomedical Engineering, University of Virginia.  
Sabia Abidi, PhD, Assistant Teaching Professor, Department of Bioengineering,  
Rice University.

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10:00 - 10:50 **Parallel Sessions Repeat I**

11:00 - 11:50 **Parallel Sessions Repeat II**

12:00 - 2:00 **Closing Lunch and Keynote 2: Jenny Munson, PhD, Associate  
Professor, Virginia Tech.**



# BMES

BIOMEDICAL ENGINEERING SOCIETY



*Scan the QR code for registration,  
accommodations and more information*

