NSF Workshop: Engineering Mechanics Education

June 6, 2023, Georgia Institute of Technology

Engineering mechanics education is now at a crossroad, facing the challenge of training an inclusive workforce equipped with modern tools to address 21st century engineering challenges such as climate change and emerging data science technologies. To address this urgent matter, this workshop will bring together education enthusiasts to discuss the future pathways to train and engage the next generation of engineering mechanics students. This workshop will serve as a forum to discuss the very definition of applied mechanics in the broader engineering curriculum and highlight potential pathways to reshape the boundaries of engineering mechanics. The workshop will take place on June 6th, the day before the 2023 conference of the Engineering Mechanics Institute. The workshop and the EMI conference will occur at the Georgia Institute of Technology (Atlanta, GA). Instructors, post-doctoral fellows, and graduate and undergraduate students are welcome to participate. Please send an email to edu.ws.emi2023@gatech.edu if you wish to register for free. The National Science Foundation will support travel awards in the amount of $1,000 per selected participant.

To apply for a $1,000 travel award, please prepare a 2-page CV (NSF style) and a one-page essay that highlights the classes that you taught in mechanics, classes that you are interested in teaching, the challenges faced or anticipated in teaching such mechanics courses, education resources that you have used or wish you could use on shared electronic platforms, and your expectations for the workshop. Please send your material to edu.ws.emi2023@gatech.edu. A subcommittee from the EMI Education Committee will be formed to evaluate applications for travel awards according to the following selection criteria: 1) Promoting diversity, equity, and inclusion in engineering mechanics; 2) Limitation to three awards per research institution (US institutions only); 3) The applicant's readiness to embark on an engineering mechanics education career as evidenced through the application material (CV and essay); 4) The applicant's need for financial support to attend the workshop. **The application deadline is May 21 for full consideration for the travel award.**

9.00 am – 10.30 am	**The future of the engineering mechanics curriculum** Lecture by Prof. Franz Ulm, Massachusetts Institute of Technology (45') Q&A (10') Group activity (20'): contents, format, constraints of the curriculum of the future Discussion (15')
10.30 am – 11.00 am	Coffee break
11.00 am – 12.30 pm	**Pedagogy in engineering mechanics education** Workshop activity led by Dr. Wendy Newstetter, formerly at the Georgia Institute of Technology (75'): how does the brain learn engineering disciplines? Discussion (15')
12.30 pm – 1.30 pm	Lunch break
1.30 pm – 3.00 pm	**Emerging technologies and accessibility to engineering mechanics education** Virtual reality tour of a geomechanics laboratory by Dr. Pooneh Maghoul, Polytechnique Montréal (30') New technologies to increase accessibility to engineering mechanics knowledge and skills, by Dr. Kamyar Davoudi, Avidemia (30')

	Group activity (20') and discussion (10') monitored by Dr. Matthieu Vandamme, Ecole des Ponts Paris Tech: how to share education resources on a shared electronic platform
3.00 pm – 3.30 pm	Coffee break
3.30 pm – 5.00 pm	**Teaching careers in engineering mechanics** Panel (45'): Dr. Xenia Wirth, California State University; Dr. Kamyar Davoudi, Avidemia; Dr. Matthieu Vandamme, Ecole des Ponts Paris Tech; Dr. Jia-Lang Le, University of Minnesota, Dr. Roger Ghanem, University of Southern California. Discussion between the audience and the panelists (30') Workshop wrap-up (15')

About the speakers

Prof. Franz Ulm
MIT

Dr. Wendy Newstetter
Georgia Tech

Dr. Pooneh Maghoul
Polytech. Montréal

Dr. Kamyar Davoudi
Avidemia

About the panelists

Dr. Matthieu Vandamme
Vice dean of the Civil Engineering and Construction department at Ecole des Ponts ParisTech, Researcher at Laboratoire Navier

Dr. Xenia Wirth
California State Fullerton, Assistant Professor, Department of Civil and Environmental Engineering

Dr. Kamyar Davoudi
Avidemia, Co-Founder and CEO

Dr. Jia-Lang Le
University of Minnesota, Professor, Department of Civil, Environmental, and Geo- Engineering

Dr. Roger Ghanem
University of Southern California, Gordon S. Marshall Professor of Engineering Technology and Professor of Civil and Environmental Engineering and Aerospace and Mechanical Engineering