Tufts CEE Seminar Series

Dates of The Events:

**Tufts CEE Seminar Series Speaker:** Ariel Horowitz - Massachusetts Clean Energy Center  
**Seminar Title:** MassCEC's focus areas and key innovation needs for decarbonization  
**Date:** Friday October 2, 2020 - 12:00pm - Virtual Event  
Zoom Link: [https://tufts.zoom.us/meeting/register/tJAkcO6tqjgqHdTRPlfXw_pUt4mAOvC-6BVj](https://tufts.zoom.us/meeting/register/tJAkcO6tqjgqHdTRPlfXw_pUt4mAOvC-6BVj)

**Tufts CEE Seminar Series Speaker:** Roger Grenier - Air Worldwide  
**Seminar Title:** Risk and Reward: An Engineer’s View from Inside the Insurance Industry  
**Date:** Friday October 9, 2020 - 12:00pm - Virtual Event  
Zoom Link: [https://tufts.zoom.us/meeting/register/tJEkd-urrjwoG9NsXF__jHCuTwGx7Kg4D2Xg](https://tufts.zoom.us/meeting/register/tJEkd-urrjwoG9NsXF__jHCuTwGx7Kg4D2Xg)

**Tufts CEE Seminar Series Speaker:** David Gute - Tufts University  
**Seminar Title:** Keeping Pace with a Constantly Moving Target: Launching a Course on COVID-19  
**Date:** Friday October 16, 2020 - 12:00pm - Virtual Event  
Zoom Link: [https://tufts.zoom.us/meeting/register/tU0tfu-qqzwqHdwBRIgPRDflCcPkVuKocl-n](https://tufts.zoom.us/meeting/register/tU0tfu-qqzwqHdwBRIgPRDflCcPkVuKocl-n)

**Tufts CEE Seminar Series Speaker:** Tufts Civil Engineering graduates  
**Seminar Title:** "Geotechnical Engineering in Action – Career Perspectives on Geotechnical Engineering and Construction from Recent and Not-So-Recent Graduates"  
**Date:** Friday October 23, 2020 - 12:00pm - Virtual Event  
Zoom Link: [https://tufts.zoom.us/meeting/register/tJAvcOCvrDkoEt0S2TSGB__W-uS3DjLBK0IK](https://tufts.zoom.us/meeting/register/tJAvcOCvrDkoEt0S2TSGB__W-uS3DjLBK0IK)

**Tufts CEE Seminar Series Speaker:** Karen Smilowitz - North Western  
**Seminar Title:** On the use of operations research methods for the design of school districts  
**Date:** Friday, October 30, 2020 - 12:00pm - Virtual Event  
Zoom Link: [https://tufts.zoom.us/meeting/register/tJkcuOuorjopG9zco1pxoEcqAwsqywrNbeYz](https://tufts.zoom.us/meeting/register/tJkcuOuorjopG9zco1pxoEcqAwsqywrNbeYz)

**Tufts CEE Seminar Series Speaker:** David Carrier  
**Seminar Title:** "Please Forget Everything You Ever Learned About Terzaghi Nov-6 Consolidation Theory"  
**Date:** Friday November 6, 2020 - 12:00pm – Virtual Event  
Zoom Link: [https://tufts.zoom.us/meeting/register/tJAkfuqgrzStlZhqjG5CthmKo8g27RiN](https://tufts.zoom.us/meeting/register/tJAkfuqgrzStlZhqjG5CthmKo8g27RiN)

**Tufts CEE Seminar Series Speaker:** Grace Parker - USGS  
**Seminar Title:** TBA  
**Date:** Friday November 13, 2020 - 12:00pm – Virtual Event  
Zoom Link: [https://tufts.zoom.us/meeting/register/tUwpdumtqTwvE9fjzwqNB8gwxBuhg5PlD0Fb](https://tufts.zoom.us/meeting/register/tUwpdumtqTwvE9fjzwqNB8gwxBuhg5PlD0Fb)

**Tufts CEE Seminar Series Speaker:** Theodore von Rosenvinge IV - GEODesign Inc.  
**Seminar Title:** Case Study - Heavy Manufacturing Building Over Soft Marine Clay Profile  
**Date:** Friday November 20, 2020 – 12:00pm – Virtual Event  
Zoom Link: [https://tufts.zoom.us/meeting/register/tMlduChpz0tH9bFlm1PjZeV0gQSkgBEEFyB](https://tufts.zoom.us/meeting/register/tMlduChpz0tH9bFlm1PjZeV0gQSkgBEEFyB)

**Tufts CEE Seminar Series Speaker:** Shaffiq Jaffer - Total  
**Seminar Title:** The Imperative for a Global Systems Approach to address Energy and Climate Challenges  
**Date:** Friday December 4, 2020 – 12:00pm - Virtual Event  
Zoom Link: [https://tufts.zoom.us/meeting/register/tJAqd-Copijjh9KfTNvVqpdDAm49Y4yL7zy](https://tufts.zoom.us/meeting/register/tJAqd-Copijjh9KfTNvVqpdDAm49Y4yL7zy)
Ariel Horowitz is an expert in energy technologies, policies, and markets. As Senior Program Director at the Massachusetts Clean Energy Center (MassCEC), Ariel oversees much of MassCEC’s work supporting commercialization of new energy innovations by researchers and early-stage companies. Ariel also directs MassCEC’s market development work related to resiliency, energy storage, and clean transportation. Ariel joined MassCEC from Synapse Energy Economics, where she provided expert witnessing services and analytical support to clients including US EPA and state regulators. Ariel holds a PhD in Chemical Engineering from Tufts University and a Bachelor’s of Science in Engineering from Swarthmore College.

The seminar will be discussing how Massachusetts is committed to reaching net zero carbon emissions by 2050. In this seminar, Dr. Horowitz will discuss the current sources of greenhouse gas emissions in the Commonwealth and the path to emissions reductions in different sectors. The Massachusetts Clean Energy Center (MassCEC) is the Commonwealth’s energy innovation agency, helping support innovators throughout Massachusetts in developing new strategies and technologies for reducing carbon. In looking to 2050, MassCEC has four focus areas for decarbonization: High Performance Buildings, Clean Transportation, Offshore Wind, and Net Zero Grid. Dr. Horowitz will review these focus areas and key areas for technological and business model innovation in each.
Roger Grenier is Senior Vice President of AIR’s Global Resilience Practice, responsible for developing AIR’s public risk strategy and leading risk reduction and resilience initiatives across the globe. AIR is part of the Verisk Analytics family of companies focused on data analytics and risk management for insurance, energy and financial services. Roger is trained as a civil engineer and has over 25 years of risk modeling experience, starting in the engineering consulting field and later in a variety of roles with AIR, including research, consulting and product management. Roger also spent 7 years in the insurance industry, as Director of Catastrophe Research and Development for a global insurance company. Roger is a graduate of the Tufts CEE Department (BSCE, 1988) and completed graduate work at Stanford University (MS) and North Carolina State University (Ph. D.). Roger is on the CEE External Advisory Board and is active with the Tufts Baseball Alumni group. Roger and his wife Diana (E88) have three children including Sylvie (A18) and Luc (A23).

The Seminar will be discussing how Civil engineers have a long history within the insurance industry in areas related to loss control, construction risk management and, most recently, catastrophe risk modeling. This presentation will consider practical applications of engineering in insurance, including modeling extreme event risk in underwriting and enterprise risk management. We’ll also explore case studies in resilience, from disaster risk financing to climate adaptation and building capacity in developing countries.
Tufts CEE Seminar Series Presents

Professor David M. Gute
Tufts Civil and Environmental Engineering
Professor, Tufts University School of Medicine
Professor, Friedman School of Nutrition Science and Policy

Topic: Keeping Pace with a Constantly Moving Target: Launching a Course on COVID-19
Friday October 16, 2020 - 12:00pm - Virtual Event

David M. Gute is a professor in the Department of Civil and Environmental Engineering at Tufts University. He holds a joint appointment with the Department of Public Health and Community Medicine at the Tufts University School of Medicine, as well as at the Gerald J. and Dorothy R. Friedman School of Nutrition Science and Policy. He directs a M.S./Ph.D. program in Environmental Health and previously served as the academic director of the Tufts in Talloires program. Prior to joining the Tufts faculty, Gute served as an assistant commissioner responsible for personal and environmental disease risk factor reductions with the Massachusetts Department of Public Health, and as an epidemiologist with the Rhode Island Department of Health.

The seminar will be discussing how the constantly changing scientific and regulatory milieu with regards to both the virus, SARS-CoV-2, as well as the evolving policy responses to address post-infection sequelae enumerated within the COVID-19 space. Lessons learned with regards to pedagogical techniques and means to facilitate to student and faculty interaction will be presented.
Tufts CEE Seminar Series Presents

Five Tufts Civil Engineering graduates will discuss their career paths in geotechnical engineering and construction, their perspectives on the past and future of the industry, and advice for current students.

**Topic:** Geotechnical Engineering in Action Career Perspectives on Geotechnical Engineering and Construction from Recent and Not-So-Recent Graduates.

**Friday October 23, 2020 - 12:00pm - Virtual Event**

**Bradford Berry** grew up in New Hampshire and Vermont, attending UVM for a BS in Civil Engineering (2012) and Tufts for a MS in Geotechnical Engineering (2014). At Keller, Bradford has worked as a field engineer, project engineer, assistant project manager, and now project manager. He has also worked with Keller’s Geotechnical Instrumentation division (Geo-Instruments) as well as with Keller in Newcastle Australia. Bradford now focuses on a wide range or projects including ground improvement, structural support, and earth support. In his free time Bradford enjoys running, biking, swimming, and reading.

**John Gill** is a Project Manager at Keller where he focuses on ground improvement, excavation support and deep foundation projects in North Carolina. He holds a BS in Civil Engineering from Tufts University (2013) and an MS in Project Management from Northwestern University. Outside of Keller, John enjoys cycling, hiking and vegetable gardening.

**Reina Romero** is a field engineer at Keller North America’s Providence office. She graduated from Tufts University in May 2020 with a Bachelor of Science in Civil Engineering and is excited to now be applying her education to geotechnical construction projects throughout New England. Her favorite activities include asking her mentor endless questions and getting her boots covered in grout.

**Jim Finnegan** graduated from Tufts with a BS in civil engineering in 2019. He received his masters in geosystems engineering at Tufts in 2020 as part of the five-year combined BS/MS program. He first learned about Keller when John Gill presented to his soil mechanics class during his junior year, and he was excited by John’s enthusiasm for the work Keller does and being on the contracting side of the industry. Jim joined Keller in the summer of 2020 as a field engineer in the Irvine, CA office.

**Kevin M. Dawson**, P.E., Vice President at Keller North America, has 17 years of geotechnical construction experience including design and construction of ground improvement, grouting, excavation support, underpinning, drilled micropile, drilled shafts, and driven pile projects for private and public sector clients. He holds masters and undergraduate degrees (2004 and 2002) in civil engineering from Tufts University and is a registered professional engineer in the state of Massachusetts. Mr. Dawson currently oversees the daily operation of Keller’s New England branch.
Tufts CEE Seminar Series Presents

Karen Smilowitz
Northwestern University

Topic: On the use of operations research methods for the design of school districts
Friday, October 30, 2020 - 12:00pm - Virtual Event

Dr. Karen Smilowitz is the James N. and Margie M. Krebs Professor in Industrial Engineering and Management Science at Northwestern University, with a joint appointment in the Operations group at the Kellogg School of Business. Dr. Smilowitz is an expert in modeling and solution approaches for logistics and transportation systems in both commercial and non-profit applications, working with transportation providers, logistics specialists and a range of non-profit organizations. Dr. Smilowitz is the founder of the Northwestern Initiative on Humanitarian and Non-Profit Logistics. She has been instrumental in promoting the use of operations research within the humanitarian and nonprofit sectors through the Woodrow Wilson International Center for Scholars, the American Association for the Advancement of Science, and the National Academy of Engineering, as well as various media outlets. Dr. Smilowitz is an Associate Editor for Transportation Science and Operations Research. Dr. Smilowitz received the Award for the Advancement of Women in OR/MS from INFORMS and led the winning team in the INFORMS Innovative Applications of Analytics Award.

The Seminar will be discussing how Operations research methods have been used to identify and evaluate solutions to the reconfiguration of public-school attendance area boundaries for over fifty years. In broad terms, the school redistricting problem seeks to find capacity-feasible assignments of students in a school district to local schools. This talk will present analysis of the use of operations research for school districting. The talk will feature a review of the literature, exploring connections between evolving issues in public education and advances in optimization, computing and geographic information systems. Much of the early work was motivated by Supreme Court decisions to desegregate schools (Brown v. Board of Education, Brown II, Green v. New Kent, Swann v. Charlotte-Mecklenburg). Around that time, papers appeared in the operations research literature proposing analytical approaches to school desegregation that made use of advances in linear programming. The talk will examine ways in which these papers modeled the trade-offs between achieving racial balance and minimizing travel distance for students, and the extent to which the resulting analysis impacted policy and court cases. We will also discuss how the limitations of early models and solution approaches hindered their applicability. The years since have seen new directions in research to address additional challenges related to the design of school attendance boundaries and leverage emerging advances in optimization, computing, and geographic information systems technology. The talk will end with a reflection on current issues facing public school districts, including school busing and return-to-school plans amid the COVID-19 pandemic, and the ways in which operations research can be part of these discussions.
Tufts CEE Seminar Series Presents

David Carrier

**Topic:** Please Forget Everything You Ever Learned About Terzaghi Consolidation Theory"

Friday November 6, 2020 – 12:00pm – Virtual Event

Dr. Carrier earned his Bachelor’s, Master’s, and Doctorate in geotechnical engineering at MIT many years ago. He has worked on projects in eighteen states, fourteen foreign countries, and two other planets. He is a pioneer in the application of large strain, non-linear consolidation to phosphatic clay, bauxite tailings, copper mill tailings, oil sand fines, dredged material, kaolin fines, heavy mineral tailings, fly ash, FGD fines, phosphogypsum, and alumina red mud. He has more than thirty-five years of experience with mineral slurries, covering field, lab, analysis, and design.

The seminar will attempt to upend Terzaghi consolidation theory. Virtually all of the field and lab analyses that have been done over the last century have been, well, wrong. In particular, the settlement rate is not proportional to H (except a 2t lab-scale); the degree of settlement is not equal to the degree of excess pore pressure dissipation; and the ratio of t90 to t50 is not constant. Terzaghi theory is fundamentally flawed; and should be replaced by large strain, non-linear (LSNL) consolidation theory.
Tufts CEE Seminar Series Presents

Grace Parker
U.S. Geological Survey, Earthquake Science Center

Topic: TBA
Friday November 13, 2020 – 12:00pm – Virtual Event
Tufts CEE Seminar Series Presents

Theodore von Rosenvinge  
Geotechnical Engineer, President  
GEO groups; GEO Design and GEOMechanics

**Topic:** Heavy Manufacturing Building Over Soft Marine Clay Profile  
**Friday November 20, 2020 – 12:00pm – Virtual Event**

Theodore (Ted) von Rosenvinge is a geotechnical engineer educated at Northeastern University (BS 1978) and MIT (MS 1980). He is President of the GEO group of companies, GEODesign (CT/NJ/NY/VT) and GEOMechanics (OR). The firm is celebrating 25 years in business as a geotechnical engineering firm and has completed 1000's of projects including major bridge and hi-rise buildings. Hailing from nearby Winchester and Gloucester, Massachusetts, he lives in Connecticut close to New York City. He is an ASCE Fellow, member of The Moles, a registered professional engineer in 13 states, and an experienced sailor having crewed in the 2019 TransAtlantic race and 15 US to Bermuda races (yes you can have a life and a career as an engineer!).

The seminar will be discussing how the depositional history of Lake Champlain in Vermont is complex involving multiple glacial episodes and a once inundated Champlain Sea with sensitive marine clays. Planning for a heavy industrial facility expansion over these clays with bedrock over 250 feet deep drove exploration of other nearby sites for more favorable conditions with thinner clay deposits. This case history will present the exploration program of deep CPT and test borings leveraged with geophysics to cover a large property to identify the best site. The importance of clay sample disturbance for this site will be demonstrated by comparison of lab results from Tufts using special procedures to results from conventional methods.
Tufts CEE Seminar Series Presents

Shaffiq Jaffer
Vice President of Corporate Science and Technology Projects
TOTAL

**Topic:** The Imperative for a Global Systems Approach to address Energy and Climate Challenges

**Friday December 4, 2020 – 12:00pm - Virtual Event**

Shaffiq Jaffer joined TOTAL in 2009, as the Vice President of Corporate Science and Technology Projects in North America (NA) with as mission to find and fund novel ideas and technologies that will lead to breakthroughs to meet future energy demand while addressing the climate challenges. He is engaged across the research ecosystem: academia, startups, and private research companies, focused on building long lasting relationships that create value for TOTAL and its partners. Prior to TOTAL, he has worked for P&G and Koch-Glitsch in research and engineering roles. He was educated in Canada at University of Alberta (BS) and McMaster University (PHD) and is a Fellow of Canadian Academy of Engineering (FCAE).

The seminar will be discussing how by 2040, the IEA new policies scenario projects a reduction in energy demand by just under 10% compared to the IEA current policies scenario. However, in order to achieve the sustainable development scenario which would limit global warming due to GHG emissions to ~2C requires a reduction of approximately 30% by 2040. However, the societal challenges the globe faces that demand further energy are: majority of the world’s populations still requires a significant improvement in the standard of living they have, nation’s further desire to see increased industrialization and there is continued urbanization with close to 70% projected to live in cities by 2050. For example, the USA/ Canada use on the order of 7000 kgoe/ per person whereas the 2 most populates countries use significantly less: China uses approximately 2000 kgoe/ pp and India uses less than 1000 kgoe/ per person. As we look at the closely at the basic need challenges for 9 billion people by 2050, the UN estimates food production must increase by 60% and similarly water demand is projected to grow by 55%. Therefore, demands for food and water will require greater amounts of energy to meet the projected growth. The challenge foreseen is that the complexity created due to the need to meet societal challenges and demands while trying to minimize climate impact will require significant efforts to model global systems to understand and make the best decisions to achieve sustainable development nationally and locally.