

PROMOTION RECOMMENDATION  
The University of Michigan  
College of Engineering  
Department of Civil and Environmental Engineering

Carol C. Menassa, assistant professor of civil and environmental engineering, Department of Civil and Environmental Engineering, College of Engineering, is recommended for promotion to associate professor of civil and environmental engineering, with tenure, Department of Civil and Environmental Engineering, College of Engineering.

Academic Degrees:

- Ph.D. 2009 University of Illinois at Urbana-Champaign, Civil and Environmental Engineering, Urbana, IL  
M.S. 2009 University of Illinois at Urbana-Champaign, Finance, Urbana, IL  
M.E. 2002 American University of Beirut, Civil and Environmental Engineering, Beirut, Lebanon  
B.E. 1995 American University of Beirut, Civil and Environmental Engineering, Beirut, Lebanon

Professional Record:

- 2013 – Present Assistant Professor, Department of Civil and Environmental Engineering, University of Michigan  
2013 – 2014 Visiting Assistant Professor, Department of Civil and Environmental Engineering, University of Wisconsin-Madison, WI  
2009 – 2013 Assistant Professor, Department of Civil and Environmental Engineering, University of Wisconsin-Madison, WI

Summary of Evaluation:

Teaching: Professor Menassa is an excellent teacher. She has taught three different courses in her two years at UM: (1) an undergraduate elective course on construction contracting, (2) a required graduate course on construction professional practice, and (3) a new advanced graduate course on sustainable civil infrastructure systems. In her courses, Professor Menassa places emphasis on case studies, in-class experiential learning exercises, the use of computational simulation tools, and connecting theory to practice. Her average Q1 and Q2 are among the highest in the department. Students uniformly praise her effective teaching methods. Professor Menassa is also an outstanding mentor. She has graduated two Ph.D. students and has another three underway. She has also directed 17 M.S. and 14 undergraduate students on research projects. Many of her students strongly credit her for their interest and success in construction engineering and management. In recognition of her effective integration of professional practice into classroom instruction, she won a Distinguished Professor Award from the Construction Industry Institute in 2015.

Research: Professor Menassa is a nationally and internationally recognized leader in the development of simulation models and quantitative tools to assess the social, financial, and environmental factors on the development of sustainable building and civil infrastructure systems. Her pioneering work on occupancy interventions for energy reduction in existing buildings, and on life cycle assessment tools for comparing alternate civil infrastructure investments, is viewed by her external evaluators as particularly influential in the field. At Michigan, she has successfully

initiated research in several new areas for improving sustainable building design and operation: development of virtual building models using coupled simulation methods for assessing strategies to reduce energy consumption; and robotic data collection of environmental and physiological parameters for data-driven simulation and real-time control of building energy systems.

Professor Menassa is a highly productive scholar. She has published 30 journal articles and over 35 conference papers in an impressive array of venues. Moreover, her work is receiving praise from her professional community, with two recent papers winning American Society of Civil Engineering (ASCE) Best Paper Awards. She has successfully acquired research funding totaling \$1.86 million as the PI or co-PI dedicated exclusively for her research program from the most highly competitive sources (e.g., multiple NSF grants including the prestigious NSF Career Award). In the construction engineering field, this type and level of support are unusual. In recognition of her outstanding scholarly record and to recruit her to Michigan, she was named a John L. Tishman Construction Management Faculty Scholar in 2013.

#### Recent and Significant Publications:

- Azar, E. and Menassa, C. (2014), "A Framework to Evaluate Energy Saving Potential from Occupancy Interventions in Typical US Commercial Buildings," *Journal of Computing in Civil Engineering - Special Issue on Computational Approaches to Understand and Reduce Energy Consumption in the Built Environment*, ASCE, 28 (1), pg. 63-78.
- Azar, E. and Menassa, C. (2014), "A Comprehensive Framework to Quantify Energy Savings Potential from Improved Operations of Commercial Building Stocks," *Energy Policy*, Elsevier, Vol. 67, pg. 459-472.
- Menassa, C., Taylor, N. and Nelson, J. (2013), "A Framework for Automated Control and Commissioning of Hybrid Ventilation Systems in Complex Buildings," *Automation in Construction*, Elsevier, Vol. 30, pg. 94-103.
- Menassa, C. (2011), "Evaluating Sustainable Retrofits in Existing Buildings under Uncertainty," *Energy and Buildings*, Elsevier, 43 (12), pg. 3576-3583.
- Menassa, C., Peña Mora, F. and Pearson, N. (2009), "An Option Pricing Model to Evaluate ADR Investments in AEC Projects," *Journal of Construction Engineering and Management*, ASCE, 135 (3), pg. 156-168.

Service: Professor Menassa performs extensive professional service, and has been an exemplary citizen of her research community. She currently serves on the editorial boards for three international journals and has served extensively as an organizer, chair, or co-chair for leading conferences and workshops. She has held key leadership roles within the ASCE, including serving first as an at large member, then secretary, and currently the vice chair (soon to be chair) of the ASCE Technical Council on Computing and Information Technology Education Committee. At the department level, Professor Menassa is the associate director of the U-M Construction Industry Alliance Program within the Construction Engineering and Management Group. She has also served on a number of department committees, commensurate with her rank. At the college and university level, she has participated in numerous mentoring and outreach activities to enhance the recruitment and retention of women in engineering.

#### External Reviewers:

Reviewer A: "Dr. Menassa's work is of the highest quality in this field . . . Dr. Menassa's scholarship [is] highly relevant to society and critical to advancing policy at local to national scales."

Reviewer B: "Compared to her peers in the same field, it is evident that Dr. Menassa has numerous accomplishments that make her stand out . . . She is an excellent ambassador for Michigan and can be expected to make rapid progress to full Professor in due course."

Reviewer C: "Her research interests are relevant at the global scale, and her research output is interesting to the international community."

Reviewer D: "...Dr. Menassa has been building a well-balanced dossier that clearly addresses the research, scholarly, teaching, and service expectations of an academic . . . it is clear to me that Dr. Menassa has been providing exemplary service in all areas of university life and, even more importantly, that she will continue to do so."

Reviewer E: "Professor Menassa has an outstanding record of research, teaching and service accomplishments and contributions that can earn her promotion to the rank of Associate Professor with tenure in any major research university in the USA."

Reviewer F: "Professor Menassa's research is of the highest quality . . . Professor Menassa is ahead of many professors in civil engineering at this stage of her career."

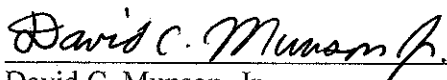
Reviewer G: "She represents those very qualities that any high caliber institution will desire in a faculty member."

Reviewer H: "...I would place her as one of the top few scholars in the field at her rank and level of experience . . . Dr. Menassa is clearly deserving of an appointment to Associate Professor with Tenure."

Reviewer I: "Carol is a unique superstar in our professional community and is a truly exceptional scholar . . . Her accomplishments to date far exceed what would be expected from someone at her rank and level."

Reviewer J: "...I consider Professor Carol Menassa a researcher who has demonstrated competence, leadership, and impact .... I am confident that she would be promoted to the same level here at [my institution] and probably at any other top institutions in the US."

Summary of Recommendation: Professor Menassa is a prominent and productive researcher who has made significant scholarly contributions in her field. She has demonstrated excellence in teaching and mentorship, and contributed laudable internal and external service. It is with the support of the College of Engineering Executive Committee that I recommend Carol C. Menassa for promotion to associate professor of civil and environmental engineering, with tenure, Department of Civil and Environmental Engineering, College of Engineering.



David C. Munson, Jr.

Robert J. Vlasic Dean of Engineering  
College of Engineering

May 2016