Approved by the Regents
May 16, 2019

PROMOTION RECOMMENDATION
The University of Michigan
College of Engineering
Department of Industrial and Operations Engineering

Seth D. Guikema, associate professor of industrial and operations engineering, with tenure, Department of Industrial and Operations Engineering, and associate professor of civil and environmental engineering, without tenure, Department of Civil and Environmental Engineering, College of Engineering, is recommended for promotion to professor of industrial and operations engineering with tenure, Department of Industrial and Operations Engineering, and professor of civil and environmental engineering, without tenure, Department of Civil and Environmental Engineering, College of Engineering.

Academic Degrees:

Ph.D.	2003	Stanford University, Management Science and Engineering, Risk and Decision Analysis, Palo Alto, CA
M.S.	1999	Stanford University, Civil and Environmental Engineering, Palo Alto, CA
M.S.	1998	University Canterbury, Civil and Environmental Engineering, Christchurch, New Zealand
B.S.	1997	Cornell University, Civil and Environmental Engineering, Ithaca, NY

Professional Record:

2016 – present	President, Risk Analytics Consulting, LLC, Ann Arbor, MI
2015 – present	Associate Professor (without tenure), Department of Civil and Environmental Engineering, University of Michigan
2015 – present	Associate Professor (with tenure), Department of Industrial and Operations Engineering, University of Michigan
2015 – 2016	Associate Research Professor, Department of Geography and Environmental Engineering, Johns Hopkins University, Baltimore, MD
2014 – 2015	Associate Professor, Department of Geography and Environmental Engineering, Johns Hopkins University, Baltimore, MD
2008 – 2014	Assistant Professor, Department of Geography and Environmental Engineering, Johns Hopkins University, Baltimore, MD
2005 – 2007	Assistant Professor, Department of Civil and Environmental Engineering, Texas A&M University, College Station, TX
2003 – 2005	Post-doctoral Researcher, Department of Civil and Environmental Engineering, Cornell University, Ithaca, NY

Summary of Evaluation:

Teaching: Professor Guikema's teaching portfolio is impressive. His students describe him as a dedicated teacher and caring mentor who challenges students to reach their full potential. He has contributed to the Department of Industrial and Operations Engineering (IOE) curriculum by developing the introductory graduate level class, IOE 591: Risk Analysis, and a second more

advanced class, IOE 691: Predictive Data Analytics for Interdisciplinary Research. This latter class is a project-based class that has led to a dozen publications in total for students who have taken the class. Professor Guikema has graduated seven Ph.D. students as a chair or co-chair and he has another 12 in progress. He is also active with Master's and undergraduate students as well as post-doctoral scholars.

Research: Professor Guikema has an exceptional research portfolio. His work combines methodological contributions, such as development of data-driven methods for risk assessment and incorporation of behaviorally-induced dynamics into risk analysis, with applications, most notably to risk in the face of hazard, including repeated hazards, and climate adaptation. His publications have appeared in high-quality journals, are highly cited, and are setting the direction for the research community in risk analysis and its application. He has published over 100 archival journal articles and his Google Scholar h-index is 32. Professor Guikema has an outstanding record of grant funding from diverse sources in government (NSF, DoE, US Forest Service) and industry.

Recent and Significant Publications:

Logan, T., S.D. Guikema, J.D. Bricker; "Engineered climate adaptations can increase vulnerability to natural hazards," *Nature Sustainability*. 08/2018, Accepted, in press.

Reilly, A.C., R. Dillon-Merrill, S.D. Guikema; "Agent Based Models as an Integrating Boundary Object for Interdisciplinary Research," *Risk Analysis*. 07/2018, Accepted, in press.

Berner, C.L., A. Staid, R. Flage, S.D. Guikema; "The Use of Simulation to Reduce the Domain of 'Black Swans' with Application to Hurricane Impacts to Power Systems," *Risk Analysis, DOI: 10.1111/risa.12742*. 2017; Vol. 37 (No. 10): pp. 1879-1897.

Tonn, G., S.D. Guikema; "An Agent-Based Model of Evolving Community Flood Risk," *Risk Analysis, DOI: 10.1111/risa.12939*. 2018; Vol. 38 (No. 6): pp. 1258-1278.

Rivera-Calle, S., C.E. Del Castilla, A. Gnanadesikan, W. Balch, S.D. Guikema; "Increase of coccolithophorids in the North Atlantic over recent decades," *Science*. 2015; Vol. 350 (Issue 6267): pp. 1533-1537.

Service: Professor Guikema's service portfolio is very strong including significant contributions at three universities, major contributions to professional societies and journal review boards in his areas of expertise, and to industrial practice through prominent positions in startup companies. Internally, he has served in several key roles including as the IOE graduate program chair. Professor Guikema also enjoys a highly regarded reputation as a leader in his field. For example, he has served on the Council for the Society for Risk Analysis and the INFORMS Decision Analysis Society, and he has chaired special interest groups within these societies. Professor Guikema has served in editorial roles including his current service as the area editor for Mathematical Modeling for the journal *Risk Analysis*. Most recently and significantly, he was elected as the president of the Society for Risk Analysis.

External Reviewers:

Reviewer A: "Seth has demonstrated the ability to work on both the theoretical and applied aspects of risk analysis. His contribution to the field and his service to both the Decision Analysis Society and the Risk Analysis Society have been phenomenal. In addition, he has great

attitude and great relations with members of our community, and he is a great colleague to work with on many committees. ... Let me say this upfront: if it were feasible for us to offer Seth a position of Full Professor here at [my institution], we would hire him in a heartbeat."

Reviewer B: "Seth has also made strong contributions to diversifying the profession. Five of his six past PhD students are women; also, two of his four past postdocs are women, and a third is African-American. In a highly technical field like engineering, it is truly remarkable that 80% of Seth's past students and postdocs come from underrepresented groups, and some are already taking on leadership roles…"

Reviewer C: "I endorse Dr. Guikema as strongly as possible. He is an outstanding engineering risk research scientist, a popular teacher and research mentor, and a gifted analyst in both predictive analytic models and decision and simulation-optimization methods for using predictive analytics to help decide what to do."

Reviewer D: "Seth is endowed with an impressive combination of scholarship, gifted teaching and communication ability, and a congenial and trustworthy personality. In particular, his dedication to high-quality work and archival publications, to teaching and to public service are indeed a model for us all."

Reviewer E: "Dr. Guikema has become one of the most influential figures worldwide in risk analysis of infrastructure systems. His work impresses me for its rigour, diversity and sheer productivity."

Summary of Recommendation: Professor Guikema is an outstanding scholar with an established body of research that has attracted international recognition in the areas of risk analysis, predictive analytics, and decision analysis. He has a significant impact through his scholarly research and his industrial consulting. He is providing leadership externally, through professional society leadership, and internally. It is with the support of the College of Engineering Executive Committee that I recommend Seth D. Guikema for promotion to professor of industrial and operations engineering, with tenure, Department of Industrial and Operations Engineering, and professor of civil and environmental engineering, without tenure, Department of Civil and Environmental Engineering, College of Engineering.

Alec D. Gallimore, Ph.D.
Robert J. Vlasic Dean of Engineering
College of Engineering

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