

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

Seymour Spence, 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 Florence, Florence, Italy, and University of Braunschweig, Braunschweig, Germany
M.S.	2005	University of Perugia, Civil Engineering, Perugia, Italy
B.S.	2005	University of Perugia, Civil Engineering, Perugia, Italy

Professional Record

2014-present	Assistant Professor, Department of Civil and Environmental Engineering, University of Michigan
2013-2014	Visiting Research Assistant Professor, Department of Civil and Environmental Engineering and Earth Sciences, University of Notre Dame, Notre Dame, IN
2011-2011	Post-Doctoral Research Associate, Dept. of Civil and Environmental Engineering and Earth Sciences, University of Notre Dame, Notre Dame, IN
2009-2011	Post-Doctoral Research Fellow, Department of Civil and Environmental Engineering, University of Perugia, Perugia, Italy

Summary of Evaluation

Teaching: Professor Spence is an enthusiastic instructor and mentor who is deeply committed to the learning and future success of his students. He has very good teaching evaluation scores, the feedback from students in the solicited letters is strong, and his Ph.D. students have been highly successful in progressing in research as evidenced by their publication records and testimony in their letters. Professor Spence has graduated two Ph.D. students, including one Notre Dame student as co-chair. He currently advises another five students (one as co-chair) with one expected to graduate this year. His efforts have been recognized with a College of Engineering John F. Ullrich Education Excellence Award and a CEE Professor of the Year Award.

Research: Professor Spence is a talented scholar whose work has advanced our ability to predict and optimize the performance of structures facing severe natural hazards. His work spans three inter-related areas: wind engineering, uncertainty quantification, and structural optimization. As part of his work on wind engineering, Professor Spence is developing performance-based design guidelines for buildings prone to hurricane and tornado hazards. Within the uncertainty quantification field, he employs metamodeling to address the probabilistic foundations of high-fidelity computational models for wind engineering. In the area of structural optimization, Professor Spence combines his expertise in wind engineering and uncertainty quantification to

develop novel theories and algorithms for the optimal design of structural systems within the context of performance-based wind engineering. In particular, he has introduced a new class of system-level stochastic optimization frameworks that can effectively and efficiently treat large-scale wind engineering design problems.

The extent and rigor of Professor Spence's scholarly work has been outstanding and his research productivity has been excellent. The awards he has received, including the American Society of Civil Engineers Croes medal and the NSF CAREER award, are indicative of the substantial national recognition that he has achieved. Through participation in national committees, he has demonstrated an ability to translate his theoretical research results into practice.

#### Recent and Significant Publications:

Chuang, W.-C., Spence, S.M.J., "Rapid Uncertainty Quantification for Non-linear and Stochastic Wind Excited Structures: A Metamodeling Approach," *Meccanica*, 2019.

Suksuwan, A., Spence, S.M.J., "Performance-Based Design Optimization of Uncertain Wind Excited Systems under System-level Loss Constraints," *Structural Safety*, 2019; 80: 13-31.

Chuang, W.-C., Spence, S.M.J., "An Efficient Framework for the Inelastic Performance Assessment of Structural Systems Subject to Stochastic Wind Loads," *Engineering Structures*, 2019; 179: 92-105.

Suksuwan, A., Spence, S.M.J., "Optimization of Uncertain Structures Subject to Stochastic Wind Loads under System-Level First Excursion Constraints: A Data-Driven Approach," *Computers and Structures*, 2018; 210: 58-68.

Kwon, D.K., Spence, S.M.J., Kareem, A., "Performance Evaluation of Database-Enabled Design Frameworks for the Preliminary Design of Tall Buildings," *Journal of Structural Engineering*, ASCE, 2015; 141(10): 04014244.

Service: Professor Spence's service record shows that he has been active in both professional and university service. Specifically, he has worked on several committees associated with the American Society of Civil Engineers and its Structural Engineering Institute. His committee work led to a contribution as lead author of Chapter 6 of the "Prestandard for Performance-Based Wind Design" which carries great potential for impact on practice in the field of wind and structural engineering. At the department level, Professor Spence has shown commitment to the department's strategic planning and curriculum development through his work on seven major committees. His reinvigoration of the Earthquake Engineering Research Institute Student Chapter as its faculty advisor further shows a commitment to students.

#### External Reviewers:

Reviewer A: "...his formulations are characterized by theoretical rigor and mathematical elegance. ... Dr. Spence's strength lies in his exceptional analytical/computational toolbox, which makes him adaptable to changes in the research environment and give him the ability to tackle a broad range of interesting research problems from fundamental principles."

Reviewer B: "... I continue to be impressed by the ability of Dr. Spence to provide solutions to very complex engineering problems. His publication record is excellent. The quality of his publications is very high."

Reviewer C: "... his research has developed well beyond the research he conducted during his PhD and post-doc. This is a sign of his maturity, ability to think independently and generate new innovative ideas."

Reviewer D: "Seymour has already established himself as a star in my fields of research, i.e., fields that deal with the reliability, optimization, performance-based engineering, and advanced computer modelling of structures."

Reviewer E: "Through his originality, creativity and hard work, he has made significant breakthroughs in some pressing and challenging problems in structural reliability and design methods."

Reviewer F: "He is effectively carving out a niche in a yet unexplored area and appears to have done it effectively. ... I would characterize Professor Spence's scholarship as exceptional and his funded research as well above average."

Summary of Recommendation: Professor Spence is an enthusiastic instructor and mentor. Professor Spence is an internationally-recognized thought leader at the cutting-edge in the field of structural reliability. His service record shows that he has been active in impactful professional and university service. It is with the support of the College of Engineering Executive Committee that I recommend Seymour Spence for promotion to associate professor of civil and environmental engineering, with tenure, Department of Civil and Environmental Engineering.



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

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