

PROMOTION RECOMMENDATION  
The University of Michigan  
College of Engineering

Bogdan Epureanu, associate professor of mechanical engineering, with tenure, Department of Mechanical Engineering, College of Engineering, is recommended for promotion to professor of mechanical engineering, with tenure, Department of Mechanical Engineering, College of Engineering.

Academic Degrees:

Ph.D. 1999 Duke University, Mechanical Engineering, Durham, NC  
M.S./B.S. 1993 Galati University, Mechanical Engineering, Galati, Romania

Professional Record:

2007 – present Associate Professor, Department of Mechanical Engineering, University of Michigan  
2002 – 2007 Assistant Professor, Department of Mechanical Engineering, University of Michigan  
2000 – 2002 Assistant Professor, Department of Mechanical Engineering, McGill University,  
Montreal, Canada  
1999 – 2000 Assistant Professor, Department of Mechanical and Aerospace Engineering, Carleton  
University, Ottawa, Canada

Summary of Evaluation:

Teaching: Professor Epureanu is an exceptional teacher and research advisor. He has taught and developed a range of courses, from basic undergraduate to advanced graduate level courses in mechanical engineering. His performance in the classroom has yielded excellent student evaluations, even in large undergraduate core classes, such as ME240. His teaching scores rank him among the top few faculty in terms of Q2 scores in the department. His teaching skills and efforts are highly respected and appreciated by the students, as evidenced from the student letters.

In addition to being an outstanding classroom teacher, Professor Epureanu is also an excellent advisor and mentor. Since joining Michigan, he has graduated eight Ph.D. students, and currently advises six more. In addition, he has advised several Master's degree students, many of whom have participated directly in his research projects. From the student letters, it is clear that he is well-respected and admired as an advisor. Professor Epureanu's strong mentorship is also demonstrated by the many papers he published with his students, and recognized with the many awards his student advisees have received. Professor Epureanu is the recipient of several prominent awards that recognize teaching excellence. These include the Professor of the Term from Pi Tau Sigma, the 1938E Award from the College of Engineering, Mechanical Engineering Department Outstanding Achievement Award, and the American Society of Engineering Education Outstanding New Mechanics Educator Award.

Research: Professor Epureanu is a renowned scholar and research leader in the field of dynamics and vibration, including nonlinear dynamics, reduced order modeling, and inverse problems. His research focuses have been on structural health monitoring, advanced nonlinear sensing techniques, control and characterization of nonlinear systems, aeroelasticity, and turbomachinery.

Professor Epureanu has developed a stellar research program at Michigan with continuous strong funding from government agencies and industry. He has published approximately 70 papers in refereed journals; about 50 since joining Michigan. Comments from the external reviewers clearly testified that his publications are of high quality and impact and that he is one of the best researchers and leaders in his

field. He has received the NSF CAREER Award and the ASME - Pi Tau Sigma Gold Medal for his contribution in research.

Recent and Significant Publications:

- K. D'Souza, A. Saito and B. I. Epureanu, "Reduced Order Modeling for Nonlinear Analysis of Cracked Mistuned Multi-Stage Bladed Disk Systems," *AIAA Journal*, to appear, 2012.
- K. D'Souza and B. I. Epureanu, "A Statistical Characterization of the Effects of Mistuning in Multi-Stage Bladed Disks," *Journal of Engineering for Gas Turbines and Power*, to appear, 2012.
- O. Marinescu, B. I. Epureanu and M. Banu, "Reduced-Order Models of Mistuned Cracked Bladed Disks," *Journal of Vibration and Acoustics*, Vol. 133(5), pp. 051014:1-9, 2011.
- S. K. Hong, B. I. Epureanu and M. P. Castanier, "Novel Sensor Placement for Damage Identification in a Cracked Complex Structure with Structural Variability," *Journal of Intelligent Material Systems and Structures*, Vol. 22(11), pp. 1189-1202, 2011.
- A. Saito and B. I. Epureanu: "Bilinear Modal Representations for Reduced-Order Modeling of Localized Piecewise-linear Oscillators," *Journal of Sound and Vibration*, Vol. 330(14), pp. 3442-3457, 2011.
- J. Lim and B. I. Epureanu, "Exploiting Delayed Nonlinear Feedback for Sensing Based on Bifurcation Morphing," *International Journal of Structural Stability and Dynamics*, Vol. 11(4), pp. 621-640, 2011.
- A. Krishnan and B. I. Epureanu, "Renewal-Reward Process Formulation of Motor Protein Dynamics," *Bulletin of Mathematical Biology*, Vol. 73(10), pp. 1-31, 2011.
- J. Lim and B. I. Epureanu, "Forecasting a Class of Bifurcations: Theory and Experiment," *Physical Review E*, Vol. 83(016203), pp. 1-9, 2011.
- S. K. Hong, B. I. Epureanu, M. P. Castanier and D. J. Gorsich, "Parametric Reduced Order Models for Predicting the Vibration Response of Complex Structures with Component Damage and Uncertainties," *Journal of Sound and Vibration*, Vol. 330(6), pp. 1091-1110, 2011.
- A. Saito, B. I. Epureanu, M. P. Castanier and C. Pierre "Node Sampling for Nonlinear Vibration Analysis of Structures with Intermittent Contact," *AIAA Journal*, Vol. 48(9), pp. 1903-1915, 2010.
- K. D'Souza and B. I. Epureanu, "Detection of Global and Local Parameter Variations Using Nonlinear Feedback Auxiliary Signals and System Augmentation," *Journal of Sound and Vibration*, Vol. 329(13), pp. 2463-2476, 2010.

Service: Professor Epureanu is an outstanding citizen, providing excellent service and leadership to the university and to the technical community. He is an associate editor for the two top engineering journals in his field and is on the editorial board of another three. He also has served multiple times as a guest editor. He was the program co-chair for the ASME *International Design Engineering Technical Conference (IDETC)*, chair of the *Biennial Conference on Mechanical Vibration*, and has served in conference program committees for other international conferences. He is a very active member of several ASME Technical Committees and has been elected a fellow of ASME. Internally, Professor Epureanu has served the University of Michigan at all levels. He is currently an elected member of the Mechanical Engineering Department Advisory Committee.

External Reviewers:

Reviewer A: "His body of work has received excellent recognition in the community...Comparing him to his peers in the US, Europe and Asia, his fresh approach based on a firm footing in nonlinear dynamics marks him out as an international leader in the field."

Reviewer B: "...Dr. Epureanu definitely has an amazing record of accomplishments and contributions in research, teaching, and service. This record clearly distinguishes him as both a national and international leader in his field."

Reviewer C: "On scholarly visibility and relative status among his peers, I would say he is at the very top."


Reviewer D: "Simply put, Professor Epureanu's research accomplishments are exemplary in scope, substance and quantity...Dr. Epureanu's publication record would be the envy of many established full professors..."

Reviewer E: "I would be hard pressed to find another academic at this stage in his/her career with the accomplishments, international visibility, and demonstrated impact that Bogdan has achieved."

Reviewer F: "All of the previous features characterize Professor Epureanu as a fully recognized and highly creative researcher and scholar, with a well-established international reputation."

Reviewer G: "Bogdan's work on nonlinear system identification is recognized to be among the best in its field, in terms of both fundamental contributions and utility for applications."

Summary of Recommendation: Professor Epureanu has contributed significantly to all aspects of research, teaching, and service. He has developed a stellar research program and publication record. His work has major impact in the field of dynamics and vibration, and is well-recognized and highly praised by external reviewers. He is an excellent teacher, advisor and mentor to our students. He is a leader and great citizen who significantly contributes to both external and internal service. It is with the support of the College of Engineering Executive Committee that I recommend Bogdan Epureanu for promotion to professor of mechanical engineering, with tenure, Department of Mechanical Engineering, College of Engineering.



David C. Munson, Jr.  
Robert J. Vlasic Dean of Engineering  
College of Engineering

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