TEODORA RUTAR SHUMAN, PH.D.

Professor and Chair, Mechanical Engineering Department, Seattle University

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EDUCATION

Doctor of Philosophy 2000
University of Washington, Seattle, Washington
Dissertation: "NOx and CO Formation in Lean-Premixed Methane-Air Combustion in a Jet-Stirred Reactor Operated at Elevated Pressure"

Master of Science, Mechanical Engineering, 1994
University of Washington, Seattle, Washington
Thesis: "Nitrous Oxide Destruction by Reburning in a Jet-Stirred Reactor"

Bachelor of Science, Mechanical Engineering, 1992
University of Belgrade, Belgrade, Yugoslavia

PROFESSIONAL EXPERIENCE

Department Chair 2012—present
Seattle University, Mechanical Engineering

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- Leading marketing campaign for sustainable MSME enrollment management
- Managed and empowered professors and staff in a successful ABET accreditation and ongoing assessment process
- Managing five separate budgets for the department and the grant
- Training: Chair as Transformative Leader, Chair's Community of Practice
- Organizer and active participant in annual ASME MEED leadership summit

Professor 2017—present

Associate and Assistant Professor 2000—2017

Seattle University

- Senior Design Coordinator 2000—2011, 2015—2016
- Paccar Professor 2007—2011, 2016—2018
- Taught 13 different courses and advised 13 senior design projects
- PI/co-PI on three NSF and six other external grants, totaling over $2.4 M
- Involved over 25 undergraduate students in research
- Co-authored 13 published journal articles, 22 peer-reviewed conference papers, and numerous other scholarly

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PUBLICATIONS

PEER-REVIEWED JOURNAL ARTICLES (undergraduate students are underlined)

1. Han, Y-L., Cook, K., Turns, J., Mason, G., and Shuman, T. R., "Students' Experience of an Integrated Electrical Engineering and Data Acquisition Course in an Undergraduate Mechanical Engineering Curriculum" *IEEE Transactions on Education,* Vol. 65, Issue 3, August 2022, Pages 331-343, 10.1109/TE.2022.3178666
2. Han, Y-L., Cook, K., Mason, G., and Shuman, T. R., "Enhance engineering design education in the middle years with authentic engineering problems" *Journal of Mechanical Design, Transactions of the ASME*, Vol. 140, Issue 12, December 2018, 122001-122001-9
3. Cook, K.E., Han, Y-L., Shuman, T. R., and Mason, G., "Effects of Integrating Authentic Engineering Problem Centered Learning on Student Problem Solving" *International Journal of Engineering Education* Vol. 33, No. 1(A), 2017, Pages 272–282
4. Shuman, T.R., Mason, G., Han, Y.L., and Cook, K., "A novel approach to educating engineers: learning in an inverted classroom through problems designed by engineering professionals" *Journal of Applied Engineering Science,* Volume 14, Number 3, 2016, Pages 329-334
5. Shuman, T. R., Mason, G., Reeve, D., Schacht, A., Goodrich, A., Napan, K., and Quinn, J. "Low-Energy Input Continuous Flow Rapid Pre-Concentration of Microalgae through Electro-Coagulation-Flocculation" *Chemical Engineering Journal*, Volume 297, 2016, Pages 97-105
6. Shuman, T. Rutar, Mason, G., Marsolek, M., Lin, Y., Reeve, D., and Schacht, A. "An Ultra-Low Energy Method for Rapid Two-Stage [illegible]

12. Rutar, T., Malte, P. C., and Kramlich, J. C. “Investigation of NOx and CO Formation in Lean-Premixed, Methane-Air, High-Intensity, Confined Flames at Elevated Pressures.” *Proceedings of the Combustion Institute*, Vol. 28, pp. 2435-2441, 2000
13. Safoutin, M. J., Atman, C. A., Adams, R., Rutar, T., Kramlich, J. C., Fridley, J. L. “A Design Attribute Framework for Course Planning and Learning Assessment.” *IEEE Transactions on Education*, Vol. 43, pp. 188-199, May 2000
14. Rutar, T., Kramlich, J. C., Malte, P. C. and Glarborg, P. "Experimental and Modeling Study of N_2O Destruction by Reburning." *Combustion and Flame*, Vol. 107, pp. 453-463, 1996

PEER-REVIEWED CONFERENCE PAPERS *(presenter’s name is in italics)*

1. *Shuman, T*. “Online Labs and DEI in Introduction to Thermodynamics Course” *Proceedings of 2023 ASEE Annual Conference and Exposition,* Baltimore, MD, 2023
2. *Han, Y.-L., Turns, J., Cook, K., Mason, G., & Shuman, T.R*. “Building a culture of “Engineering with Engineers”” *Proceedings of 2023 ASEE Annual Conference and*

11.

23. *Rutar Shuman, T.* and Mason, G., "Description of Three Algae-Related Interdisciplinary Senior Design Projects in Mechanical Engineering and Their Impact on Students." *Proceedings of the 2011 American Society of Engineering Education Annual Conference & Exposition*, 2011. **ECC Division 2nd Best Paper award.**
24. *Rutar, T.* and Shuman, B., "A Module Oriented Project Management Approach to Undergraduate Design Projects." *Proceedings of the 2011 American Society of Engineering Education Annual Conference & Exposition*, 2011
25. *Rutar, T.* and Mason, G., "Design of Experiments in Introduction to Thermodynamics Course." *Proceedings of the 2011 American Society of Engineering Education Annual Conference & Exposition*, 2011
26. Rutar, T. and *Mason, G.,* "Three Freshman Team Design Projects." *Proceedings of the 2005 American Society of Engineering Education Annual Conference & Exposition*, 2005
27. Rutar, T. and Mason, G., "Assessing Student Design Team Prf-0 0 17p12 108 562. 0 12 1ga-f0.9amem Pii

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3. *Rutar Shuman, T.,* and Mason, G., "Rapid and Ultra-low Energy-use Pre-Concentrating of Microalgae" *2014 Algae Biomass Summit,* San Diego, CA, September 29-October 2, 2014
4. *Rutar Shuman, T*., Lin, Y., Bowman, C., Kurtz, V., Pawlak, G. D., "Microalgal Cell Vitality After Ultra-Low Energy Input R

	Fuel Concentration Measurements in Experimental Pulse Detonation Engine		2003—2004
11	2004	Pratt & Whitney Seattle T (e)erM Tm[(U)-11 Tf9.96 0 0 9.96 9nation BD 0 0 9.9686 9natnet (e),uu 7	

Reviewer, *Journal of Engineering for Gas Turbines and Power* 2000, 2001
Scientific Committee, *Journal of Engineering Management and Competitiveness* 2011—present
Scientific Committee, *5th International Symposium of Industrial Engineering 2012*, June 14-15, 2012, Belgrade, Serbia 2012
Executive Committee Member, *WSSCI* 2001—2003

Seattle University:
Faculty Handbook Revision Committee, member 2019—2021
Billodue Maker Space Advisory group, member 2019—2021
Chair, Member (2019—2021)

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