

Joshua Alan Enszer

Department of Chemical & Biomolecular Engineering
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EDUCATION

Ph.D. in Chemical Engineering, University of Notre Dame, 2010

M.S. in Chemical Engineering, University of Notre Dame, 2008

B.S. in Chemical Engineering, Mathematics, Michigan Technological University, 2005

PROFESSIONAL EXPERIENCE

Assistant Professor of Instruction Department of Chemical & Biomolecular Engineering University of Delaware, Newark, DE	08/2015-present
Lecturer Department of Chemical, Biochemical, and Environmental Engineering University of Maryland Baltimore County, Baltimore, MD	08/2011-07/2015
Visiting Assistant Teaching Professor Department of Chemical and Biomolecular Engineering Interim Course Coordinator First-Year Program, College of Engineering University of Notre Dame, Notre Dame, IN	01/2011-07/2011
Postdoctoral Associate Department of Chemical and Biomolecular Engineering First-Year Program, College of Engineering University of Notre Dame, Notre Dame, IN	08/2010-12/2010
First-Year Engineering Graduate Instructor College of Engineering University of Notre Dame, Notre Dame, IN	01/2009-12/2009
Graduate Associate Kaneb Center for Teaching and Learning University of Notre Dame, Notre Dame, IN	08/2007-08/2010
Graduate Research Assistant (Advisor: Dr. Mark Stadtherr) Graduate Teaching Assistant Department of Chemical and Biomolecular Engineering University of Notre Dame, Notre Dame, IN	08/2005-08/2010

HONORS AND AWARDS

UD Center for Teaching and Assessment of Learning Travel Grant, 2016

UMBC Academic Innovation Fellow, 2013-2014

UMBC nominee, National Effective Teaching Institute, 2012

Center for Research Computing Award for Computational Sciences and Visualization, University of Notre Dame, 2010

Outstanding Graduate Student Teaching Assistant Honorable Mention, Graduate Student Union, University of Notre Dame, 2010

Travel funds for the conference on Foundations of Computer-Aided Process Design, 2009

Scholarship to attend the Wakonse Conference on College Teaching, Kaneb Center, University of Notre Dame, 2009

Graduate Student Teaching Apprenticeship, College of Engineering, University of Notre Dame, 2009

Travel funds for the AIChE Annual Meeting from the Computing and Systems Technology division, 2008

Funding from NSF to attend the Pan American Advanced Studies Institute Program on Emerging Trends in Process Systems Engineering, 12-21 August 2008, Mar del Plata, Argentina

Advanced Teaching Scholar Certificate, Kaneb Center, University of Notre Dame, 2008

Outstanding Graduate Student Teacher Award, Kaneb Center, University of Notre Dame, 2008

Lilly Presidential Fellowship, University of Notre Dame, 2005-2009
Full tuition scholarship plus stipend for four years of doctoral work

Phi Kappa Phi honors fraternity induction, Michigan Tech chapter, 2004

SUPPORT

\$25,000 from Hrabowski Fund for Academic Innovation Implementation and Research Award, P.I., 2013-2014

\$2,400 from Hrabowski Fund for Academic Innovation Seed Grant, co-P.I., 2013-2014

\$2,000 from UMBC Writing Board, P.I., 2012-2013

SKILLS AND INTERESTS

Computer skills: Proficient with MATLAB, Microsoft Office, Blackboard
Experienced with RiskCalc, Mathematica, Google Apps, Sakai, wikis and blogs
Competent with HYSYS/Aspen Plus, LabVIEW, ROBOLAB, EPISUITE, C++

Teaching interests: Fundamentals of Engineering, Material and Energy Balances, Product Design, Computational Methods, Process Control and Safety, Computational Ecology, Chemical Kinetics; willing to instruct any core courses in the curriculum

Research interests: Implementation of portfolios as a means for student reflection and critical thinking
Serious games and their use in engineering education
Mathematical modeling in ecology, biology, and epidemiology

TEACHING EXPERIENCE, UNIVERSITY OF DELAWARE

Fall 2016

Chemical Engineering Thermodynamics I, CHEG 231 (110 students across 2 sections; team taught)

Chemical Process Design I, CHEG 431 (70 students; team taught)

Chemical Engineering Laboratory II, CHEG 445 (40 students; coordinator/special projects)

Spring 2016

Introduction to Chemical Engineering, CHEG 112 (130 students across 2 sections; team taught)

Random Variability in Chemical Processes, CHEG 304 (90 students; team taught)

Chemical Engineering Laboratory I, CHEG 345 (observation)

Fall 2015

Chemical Engineering Thermodynamics I, CHEG 231 (100 students across 2 sections; team taught)

Chemical Process Design I, CHEG 431 (90 students across 2 sections; team taught)

TEACHING EXPERIENCE, UNIVERSITY OF MARYLAND BALTIMORE COUNTY

Summer 2015

Chemical Engineering Analysis (Material and Energy Balances), ENCH 215 (30 students)

Chemical and Environmental Modeling, ENCH 470 (10 students)

Spring 2015

Chemical Engineering Problem Solving and Experiment Design, ENCH 225 (70 students in 3 sections)

Chemical Process Control and Safety, ENCH 442 (60 students)

Chemical Engineering Systems Analysis, ENCH 642 (10 students)

Fall 2014

Chemical Engineering Problem Solving and Experiment Design, ENCH 225 (20 students)

Chemical and Environmental Modeling, ENCH 470/654 (10 students)

Summer 2014

Chemical Engineering Analysis (Material and Energy Balances), ENCH 215 (30 students)

Spring 2014

Chemical Engineering Problem Solving and Experiment Design, ENCH 225 (60 students in 3 sections)

Chemical Process Control and Safety, ENCH 442 (45 students)

Fall 2013

Chemical Engineering Problem Solving and Experiment Design, ENCH 225 (20 students)

Transport I: Fluid Mechanics, ENCH 425 (60 students)

Chemical and Environmental Modeling, ENCH 470/654 (10 students)

Summer 2013

Chemical Engineering Analysis (Material and Energy Balances), ENCH 215 (25 students)

Spring 2013

Chemical Engineering Problem Solving and Experiment Design, ENCH 225 (60 students in 3 sections)

Chemical Engineering Systems Analysis (Process Control), ENCH 442 (40 students)

Fall 2012

Introduction to Engineering, ENES 101 (220 students in 1 lecture/8 lab sections; team taught)

Chemical and Environmental Modeling, ENCH 470/654 (10 students)

Spring 2012

Chemical Engineering Problem Solving and Experiment Design, ENCH 225 (60 students in 3 sections)
 Process Design and Economics II, ENCH 446 (40 students; team taught)

Fall 2011

Chemical Engineering Analysis (Material and Energy Balances), ENCH 215 (70 students; team taught)
 Chemical Engineering Laboratory, ENCH 437L (20 students in 2 sections; team taught)

TEACHING EXPERIENCE, UNIVERSITY OF NOTRE DAME

Spring 2011

Introduction to Engineering Systems II, EG 10112 (400 students in 2 lecture/14 lab sections; team taught)
 Computer Methods for Chemical Engineers, CBE 20258 (70 students)
 Chemical Process Control, CBE 30358 (60 students, team taught)

Fall 2010

Introduction to Engineering Systems I, EG 10111 (400 students in 2 lecture/14 lab sections; team taught)
 Fundamentals of Chemical Engineering (Material and Energy Balances), CBE 20255 (80 students; team taught)

Fall 2009

Introduction to Engineering Systems I, EG 11111(60 students in 2 lab sections)

Spring 2009

Introduction to Engineering Systems II, EG 11112 (60 students in 2 lab sections)

Spring 2008

Computer Methods for Chemical Engineering, CBE 20258 (50 students)

PUBLICATIONS: PEER-REVIEWED ARTICLES

1. C. A. Bodnar, D. Anastasio, J. A. Enszer, and D. D. Burkey. "Engineers at Play: Games as Teaching Tools for Undergraduate Engineering Students." *J Eng Educ.* **105**: pp. 147-200 (2016).
2. J. A. Enszer, D. A. Măceș, and M.A. Stadtherr. "Probability Bounds Analysis for Nonlinear Population Ecology Models." *Math Biosci.* **267**: pp. 97-108 (2015).
3. J. A. Enszer, Y. Lin, S. Ferson, G. F. Corliss, and M. A. Stadtherr. "Probability Bounds Analysis for Nonlinear Dynamic Process Models." *AIChE J.* **57**: pp. 404-422 (2011).
4. J. A. Enszer and M. A. Stadtherr, "Verified Solution and Propagation of Uncertainty in Physiological Models." *Reliab Comput.* **15**: pp. 168-178 (2011).
5. J. A. Enszer and M. A. Stadtherr, "Verified Solution Method for Population Epidemiology Models with Uncertainty." *Int. J. Appl. Math. Comput. Sci.* **19**: pp. 501-512 (2009).
6. Y. Lin, J. A. Enszer, and M. A. Stadtherr. "Enclosing All Solutions of Two-Point Boundary Value Problems for ODEs," *Comput. Chem. Eng.* **32**: pp. 1714-1725 (2008).

PUBLICATIONS: PEER-REVIEWED CONFERENCE PROCEEDINGS

1. J. A. Enszer, "The Solve – Personalize – Integrate – Think Approach in the Process Control Classroom." Presented at the ASEE Annual Meeting, New Orleans, LA, 26-29 June 2016.
2. M. Castellanos and J. A. Enszer. "Promoting Metacognition through Writing Exercises in Chemical Engineering." Presented at the ASEE Annual Meeting, Seattle, WA, 14-17 June 2015.

3. J. A. Enszer. "A Course in Problem Solving with Experimental Design." Presented at the ASEE Annual Meeting, Indianapolis, IN, 15-18 June 2014.
4. J. A. Enszer and M. Castellanos. "A Comparison of Peer Evaluation Methods in Capstone Design." Presented at the ASEE Annual Meeting, Atlanta, GA, 23-26 June 2013.
5. M. Castellanos and J. A. Enszer. "Promoting Metacognition through Reflection Exercises in a Thermodynamics Course." Presented at the ASEE Annual Meeting, Atlanta, GA, 23-26 June 2013.
6. J. A. Enszer, V. E. Goodrich, and R. B. Getman. "Improvements in Computational Methods Courses in Chemical Engineering." Presented at the ASEE Annual Meeting, San Antonio, TX, 10-13 June 2012.
7. T. M. Bayles, J. A. Enszer, and J. M. Ross. "Incorporating Engineering Design into High School STEM Initiatives." Presented at the ASEE Annual Meeting, San Antonio, TX, 10-13 June 2012.
8. J. A. Enszer, J. A. Kuczenski, K. L. Meyers, J. B. Brockman, and M.J. McCready. "Electronic Portfolios in Academic Advising, Self-Guided Learning, and Self-Assessment." Presented at the ASEE Annual Meeting, Vancouver, 26-29 June 2011.
9. J. A. Kuczenski, J. A. Enszer, M. J. McCready, and J. B. Brockman. "Student Electronic Portfolios for Professional Development Using Google Apps." Presented at the 2010 ASEE Annual Meeting, Louisville, KY, 20-23 June 2010.
10. J. A. Enszer and M. A. Stadtherr. "Verified Solution of Nonlinear Dynamic Models in Epidemiology." Presented at the 15th European Conference in Mathematics for Industry, University College London, 30 June – 4 July 2008. In E. Wilson, A. Fitt, and J. Norbury, eds. ECMI 2008 Proceedings, Springer (2009).
11. J. A. Enszer and M. A. Stadtherr. "Rigorous Propagation of Imprecise Probabilities in Process Models." Presented at the 7th International Conference on Foundations of Computer-Aided Process Design, Breckenridge, CO, 7-12 June 2009. In M. M. El-Halwagi and A. A. Linninger, eds. Proceedings of the 7th International FoCAPD Conference, Breckenridge, CO, pp. 77-92 (2009).
12. J. A. Enszer, Y. Lin, S. Ferson, G. F. Corliss, and M. A. Stadtherr. "Propagating Uncertainties in Modeling Nonlinear Dynamic Systems." Presented at the 3rd International Workshop on Reliable Engineering Computing, Georgia Institute of Technology at Savannah, 20-22 Feb 2008. In R. L. Muhanna and R. L. Mullen, eds. Proceedings of the 3rd International REC Workshop, Georgia Institute of Technology at Savannah, GA, pp. 89-105 (2008).

PRESENTATIONS

1. J. A. Enszer, "From 'Process Control' to 'Process Control and Safety.'" Presented at the AIChE Annual Meeting, Salt Lake City, UT, 8-12 November 2015.
2. J. A. Enszer, T.M Bayles, J. M. Ross, and J. B. Leach, "Enhancing Hands-on Problem Solving Across the Chemical Engineering Curriculum." Presented at the AIChE Annual Meeting, Atlanta, GA, 16-21 November 2014.
3. C. A. Bodnar, D. D. Burkey, J. A. Enszer, and D. Anastasio, "Engineers at Play: Utilization of Games as Teaching Tools for Undergraduate Engineering Students." Presented at the AIChE Annual Meeting, Atlanta, GA, 16-21 November 2014.

4. J. A. Enszer and T. M. Bayles, "Encouraging Information Transfer with a Pre-Capstone Design Project." Presented at the AIChE Annual Meeting, San Francisco, CA, 3-7 November 2013.
5. J. A. Enszer. "Level Up! Gamification and Positive Psychology in the Chemical Engineering Classroom." Presented at the AIChE Annual Meeting, Pittsburgh, PA, 28-31 Oct 2012.
6. J. A. Enszer. "Electronic Portfolios in Self-Assessment, Self-Guided Learning, and Academic Advising." Presented at 12th Annual Midwest Conference on the Scholarship of Teaching and Learning, South Bend, IN, 15 April 2011.
7. J. A. Enszer. "Electronic Tools for Student Engagement in Introductory Engineering." Poster presented at the 2010 AIChE Annual Meeting, Salt Lake City, UT, 7-12 Nov 2010
8. J. A. Enszer, K. A. Smith, and M. A. Stadtherr. "Verified Probability Bounds Analysis around Bifurcations in an Ecosystem Model." Presented at the 2010 AIChE Annual Meeting, Salt Lake City, UT, 7-12 Nov 2010.
9. J. A. Enszer, K. A. Smith, and M. A. Stadtherr. "Verified Probability Bounds Analysis around Bifurcations in an Ecosystem Model." Presented at the 14th GAMM - IMACS International Symposium on Scientific Computing, Computer Arithmetic, and Validated Numerics, ENS Lyon, France, 27-30 Sept 2010.
10. J. A. Enszer and M. A. Stadtherr. "Verified Probability Bound Analysis for Dynamic Nonlinear Systems." Poster presented at Cyberinfrastructure Days 2010, University of Notre Dame, Notre Dame, IN, 29-30 Apr 2010.
11. J. A. Enszer and M. A. Stadtherr. "Verified Solution of Ordinary Differential Equations with Probabilistic Uncertainty." Poster presented at the 2009 AIChE Annual Meeting, Nashville, TN, 8-13 Nov 2009.
12. J. A. Enszer, K. J. Kulacki, and M. A. Stadtherr. "Modeling Impacts of Contaminants in an Aquatic Community: Bounding Effects of Uncertainty." Presented at the 2009 AIChE Annual Meeting, Nashville, TN, 8-13 Nov 2009.
13. J. Enszer, L. McWilliams, and K. Meyers. "Design and Demonstration of a Physical Principle." Poster presented at the Workshop on Reforming the First Year Engineering Experience, University of Notre Dame, Notre Dame, IN, 2-4 Aug 2009.
14. J. A. Enszer and M. A. Stadtherr. "Probability Bounds Analysis in Modeling Nonlinear Ecosystem Dynamics." Presented at the 2008 AIChE Annual Meeting, Philadelphia, PA, 16-21 Nov 2008.
15. J. A. Enszer and M. A. Stadtherr. "Verified Solution of Epidemiological Models with Probabilistic Uncertainty." Presented at the 2008 AIChE Annual Meeting, Philadelphia, PA, 16-21 Nov 2008.
16. J. A. Enszer and M. A. Stadtherr. "Verified Uncertainty Analysis in Modeling Nonlinear Bioreactor Dynamics." Presented at the 2008 AIChE Annual Meeting, Philadelphia, PA, 16-21 Nov 2008.
17. K. J. Kulacki, D. M. Costello, J. A. Enszer, and G. A. Lamberti. "Predicting the Toxicity of Novel Chemicals to Benthic and Pelagic Organisms Using Experimentation and Mathematical Modeling." Presented at SETAC - Ohio Valley Chapter, Bloomington, IN, 3 Oct 2008.

18. J. A. Enszer and M. A. Stadtherr. "Verified Solution and Propagation of Uncertainty in Physiological Models." Presented at the 13th GAMM - IMACS International Symposium on Scientific Computing, Computer Arithmetic and Verified Numerical Computations, University of Texas at El Paso, 29 Sept – 3 Oct 2008.

INVITED WORKSHOPS

1. J. Enszer, S. Hill, H. Goodson, and A. Holmes, "Active Learning Strategies." Presented at the Wakonse Conference for College Teaching, Shelby, MI, 22-27 May 2014.
2. J. Enszer, L. Lewis, and S. Joseph, "Active Learning Strategies." Presented at the Wakonse Conference for College Teaching, Shelby, MI, 23-28 May 2013.
3. J. Enszer, "Keeping Students Engaged in Class." Presented at the University of Notre Dame, 14 Feb 2011.

PROFESSIONAL AND SERVICE ACTIVITIES

Department

Undergraduate Academic Advisor, UD Chemical Engineering (30 students/year), 2015-present
 UMBC Chemical Engineering (50 students/year), 2011-2015

Curriculum Review Committee, UD Chemical Engineering program, 2015-present

Faculty Advisor, UD student chapter of American Institute of Chemical Engineers, 2016-present
 Co-Advisor, 2015-2016

Faculty Advisor, UMBC student chapter of American Institute of Chemical Engineers, 2014-2015

Assessment Coordinator for ABET Accreditation, UMBC Chemical Engineering, 2012-2015

Undergraduate Committee, UMBC Chemical Engineering program, 2011-2015

College

College of Engineering ABET Team (Chemical Engineering faculty representative), 2015-present

Educational Activities Committee (Chemical Engineering representative), 2015-present

University

Faculty Co-Advisor, UD student chapter of Out in STEM, 2016-present

Search Committee Member for Assistant Director, UD Center for Teaching and Assessment of Learning, 2016

UMBC Faculty Development Center Steering Committee, 2014-2015

UMBC Career Community Steering Committee, 2014-2015

UMBC Scholarship of Teaching and Learning Community, 2012-2015

Academic Advisor, UMBC Undergraduate Academic Orientation Days, 2012-2014

Faculty Advisor, UMBC British Television Appreciation Club, 2012-2015

Notre Dame Serious Games and Learning Academic Community, 2010-2011

Summer Reading Group Facilitator, Notre Dame Kaneb Center for Teaching and Learning, 2009-2011

Secretary and Chemical Engineering Representative, Notre Dame Graduate Career Advisory Council, 2007-2010

Profession

Staff Consultant, Center for Chemical Process Safety, 2015-present

Session Chair, Education Division, AIChE Annual Meeting, 2015

Reviewer, *Advances in Engineering Education*, 2014-present

Reviewer, Chemical Engineering Division, ASEE Annual Meeting, 2012-present

Reviewer, *Teaching with Technology Volume 2*, Learning Technology Consortium, 2011

American Society for Engineering Education, 2009-present

American Institute of Chemical Engineers, 2008-present
Senior Member, 2015-present

Community

Professional Mentor, Howard High School Gifted and Talented Research Program, 2013-2014

FIRST LEGO League Judge, Maryland State Finals, Catonsville, MD, 2012

FIRST LEGO League Coach, LaSalle Intermediate Academy, South Bend, IN, 2010-2011

Municipal Liaison, National Novel Writing Month, South Bend, IN, 2008-2009

Judge, Northern Indiana Regional Science & Engineering Fair, 2006-2010

Pastoral Council, St. Albert the Great University Parish, Houghton, MI, 2002-2005
President, 2004-2005
Secretary, 2003-2004