

# Devin R. Berg

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## Professional Interests

Experiential learning in engineering education.  
International Engineering Development/Global Engineering  
Design and fabrication of medical devices.  
Bio-inspired engineering and design.  
Additive manufacturing.

## Education

2013	<b>PhD Mechanical Engineering</b> , University of Minnesota - Twin Cities
2011	<b>MS Mechanical Engineering</b> , University of Minnesota - Twin Cities Minor: Biomedical Engineering
2008	<b>BS Mechanical Engineering</b> , University of Wisconsin - Madison

## Academic Positions

2016–present	<b>Associate Professor</b> , University of Wisconsin - Stout
2015–present	<b>Program Director</b> , Mechanical Engineering, University of Wisconsin - Stout
2015	<b>Research Scholar</b> , Discovery Center, University of Wisconsin - Stout
2014–2016	<b>Program Director</b> , Manufacturing Engineering, University of Wisconsin - Stout
2012–2016	<b>Assistant Professor</b> , University of Wisconsin - Stout
2012	<b>Adjunct Faculty</b> , University of St. Thomas
2011–2012	<b>Lab Supervisor</b> , Medical Devices Center
2010–2012	<b>Teaching Assistant</b> , University of Minnesota - Twin Cities
2008–2012	<b>Graduate Research Assistant</b> , University of Minnesota - Twin Cities

## Peer-Reviewed Journal Articles

- 2016 J. Dekarske and D. R. Berg. Path oriented powered wheelchair navigation assistance. *The Journal of Open Engineering*, 2016. submitted
- 2016 D. R. Berg, T. Lee, and E. Buchanan. A methodology for exploring, documenting, and improving humanitarian service learning in the university. *Journal of Humanitarian Engineering*, 2016
- 2015 D. R. Berg. Twitter in the engineering classroom. *Journal of Online Engineering Education*, 6(2), 2015
- 2010 Z. G. Liu, D. R. Berg, V. N. Vasys, M. E. Dettmann, B. Zielinska, and J. J. Schauer. Analysis of C1, C2, and C10 through C33 particle-phase and semi-volatile organic compound emissions from heavy-duty diesel engines. *Atmospheric Environment*, 44(8):1108–1115, 2010
- 2009 Z. G. Liu, D. R. Berg, T. A. Swor, J. J. Schauer, and B. Zielinska. A study on the emissions of chemical species from heavy-duty diesel engines and the effects of modern aftertreatment technology. *SAE Technical Paper Series 2009-01-1084*, 2009
- 2009 J. Schmidt, D. R. Berg, L. Ploeg, and H. L. Ploeg. Precision, repeatability and accuracy of optotrak optical motion tracking systems. *International Journal of Experimental and Computational Biomechanics*, 1(1):114–127, 2009
- 2008 Z. G. Liu, D. R. Berg, and J. J. Schauer. Effects of a zeolite-selective catalytic reduction system on comprehensive emissions from a heavy-duty diesel engine. *Journal of the Air & Waste Management Association*, 58(10), 2008
- 2008 Z. G. Liu, D. R. Berg, T. A. Swor, and J. J. Schauer. Comparative analysis on the effects of diesel particulate filter and selective catalytic reduction systems on a wide spectrum of chemical species emissions. *Environmental Science and Technology*, 42(16):6080–6085, 2008
- 2008 Z. G. Liu, D. R. Berg, and J. J. Schauer. An analysis of methods for measuring particulate matter mass emissions. *SAE Technical Paper Series 2008-01-1748*, 2008
- 2008 Z. G. Liu, D. R. Berg, and J. J. Schauer. Detailed effects of a diesel particulate filter on the reduction of chemical species emissions. *SAE Technical Paper Series 2008-01-0333*, 2008

## Invited Talks

- 2015 D. R. Berg and A. Roush. Engineering to Help. Keynote address: Smart Girls Rock!, Menomonie Middle School, 2015
- 2015 D. R. Berg. Engineers Without Borders USA at UW-Stout. Menomonie Rotary and Menomonie Sunrise Rotary, 2015
- 2014 D. R. Berg. HandsOnMechanics.org: A repository for demonstrations and other resources to promote best practices in the mechanics classroom. In *Proceedings of the 2014 ASEE Annual Conference*, Indianapolis, IN, 2014. ASEE
- 2013 D. R. Berg. Surgical robotics under fluid power. In *Proceedings of the 2013 Design of Medical Devices Conference*, Minneapolis, MN, 2013. ASME
- 2012 D. R. Berg, P. Y. Li, and A. G. Erdman. Achieving dexterous manipulation for minimally invasive surgical robots through the use of hydraulics. In *Proceedings of the 2012 ASME Dynamic Systems and Control Conference*, Fort Lauderdale, FL, 2012. ASME. (Best Paper in Session)
- 2010 D. R. Berg, P. Y. Li, A. G. Erdman, T. Cui, and T. P. Kinney. Robotic, multi-articulated endoscopic surgical tools for natural orifice transluminal endoscopic surgery. In *Doctoral Consortium for Medical Simulation and Robotics, American College of Surgeons Accredited Education Institutes Consortium*, Chicago, IL, 2010

## Peer-Reviewed Conference Proceedings

- 2016 D. R. Berg and T. Lee. Incorporation of liberal education into the engineering curriculum at a polytechnic. In *Proceedings of the 2016 ASEE Annual Conference*, New Orleans, LA, 2016. ASEE
- 2015 D. R. Berg. Use of a rube goldberg design project for engineering dynamics. In *Proceedings of the 2015 ASEE Annual Conference*, Seattle, WA, 2015. ASEE
- 2015 D. R. Berg. The relationship between class size and active twitter participation in the engineering classroom. In *Proceedings of the 2015 ASEE Annual Conference*, Seattle, WA, 2015. ASEE
- 2014 D. R. Berg. Evaluation of student learning outcomes due to self-guided engineering analysis of surroundings. In *Proceedings of the 2014 ASEE Annual Conference*, Indianapolis, IN, 2014. ASEE. Mechanics Division Best Paper Award
- 2013 D. R. Berg. Experiences with inquiry-based learning in an introductory mechanics course. In *Proceedings of the 2013 ASEE North Midwest Section Conference*, pages 318–324, Fargo, ND, 2013. ASEE
- 2013 F. Capaldi and D. R. Berg. Outcomes of using an infinitely explorable online learning system. In *Proceedings of the 2013 ASEE Annual Conference*, Atlanta, GA, 2013. ASEE
- 2012 D. R. Berg, L. A. Harder, and A. G. Erdman. Generating interest in technology and medical devices through an interactive educational game. In *Proceedings of the 2012 ASEE Annual Conference*, San Antonio, TX, 2012. ASEE
- 2011 D. R. Berg, T. P. Kinney, P. Y. Li, and A. G. Erdman. Determination of surgical robot tool force requirements through tissue manipulation and suture force measurement. In *Proceedings of the 2011 Design of Medical Devices Conference*, Minneapolis, MN, 2011. ASME
- 2011 D. R. Berg, A. Carlson, W. K. Durfee, R. M. Sweet, and T. Reihlsen. Low-cost, take-home, beating heart simulator for health-care education. In *Proceedings of Medicine Meets Virtual Reality 18*, Newport Beach, CA, 2011

## Poster Presentations

2010	D. R. Berg, P. Y. Li, A. G. Erdman, T. Cui, and T. P. Kinney. The application of fluid power to meet the needs of surgical robotics. Minneapolis, MN, 2010. LifeScience Alley Conference & Expo
2010	D. R. Berg, P. Y. Li, A. G. Erdman, T. Cui, and T. P. Kinney. The application of fluid power to meet the needs of surgical robotics. Seattle, WA, 2010. North American Summer School in Surgical Robotics and Simulation
2009	D. R. Berg, P. Y. Li, A. G. Erdman, T. Cui, and T. P. Kinney. Robotic Multi-Articulated Surgical Tools for NOTES. Minneapolis, MN, 2009. Institute for Engineering in Medicine Innovation Showcase

## Honors and Awards

2014	ASEE Mechanics Division Best Paper Award
2008–2012	3M Science and Technology Fellowship

## Donations Negotiated

2016	Medtronic Neuromodulation: Innovative Laser Technologies System, Medical Neuro IPG BFLW/Pump Welder including IPG Photonics . Value: \$340,000
2015	Polaris Industries: (2x) Model 2014 Victory V-Twin motorcycle engines with electronic control units. Value: \$10,000
2013	Boston Scientific: Oscilloscopes, force indicators, pump controllers, power supplies, multimeters, DC motors, centrifuges, laptops, and testers. Value: \$24,425

## Grants - Awarded

2015	W. V. Shi, C. A. Anderson, D. R. Berg, and C. C. Liu. REU Site: Interdisciplinary Research Experiences in Robotics for Assitive Technology. National Science Foundation - Research Experiences for Undergraduates, 2015. Amount Awarded: \$230,400
2015	D. R. Berg. Professional Development: Presentation at the 2016 American Society for Engineering Education Annual Conference. University of Wisconsin - Stout, 2015. Amount Awarded: \$1,500
2015	E. Buchanan, D. R. Berg, and T. Lee. Exploring, Documenting, and Improving Humanitarian Service Learning through Engineers Without Borders USA. National Science Foundation - Cultivating Cultures for Ethical STEM, 2015. Amount Awarded: \$454,065
2015	W.V. Shi, D. R. Berg, and C.C. Liu. Research Incubator Grant: Development of a NSF REU Proposal in Robotics and Control Systems. University of Wisconsin - Stout, 2015. Amount Awarded: \$10,000
2014	D. R. Berg. Professional Development: Presentation at the 2015 American Society for Engineering Education Annual Conference. University of Wisconsin - Stout, 2014. Amount Awarded: \$1,874
2014	F. M. Capaldi and D. R. Berg. An Intelligent Infinitely Explorable Online Learning Environment (Re-Submission). National Science Foundation - STTR Phase I, 2014. Amount Awarded: \$224,802
2014	D. R. Berg and W. Stry. STEPS for Girls and FIRST LEGO League Competition at the University of Wisconsin-Stout. Xcel Energy Foundation, 2014. Amount Awarded: \$8,000
2013	D. R. Berg. Professional Development: Presentation at the 2014 American Society for Engineering Education Annual Conference. University of Wisconsin - Stout, 2013. Amount Awarded: \$1,550
2013	D. R. Berg. Initiation Grant: Design and Control of a Desktop Laser Welder Positioning System. University of Wisconsin - Stout Discovery Center, 2013. Amount Awarded: \$15,834

## Grants - Submitted, Not Awarded

2014	D. R. Berg and F. M. Capaldi. Using Advanced Educational Software for Automated Credentialing. National Science Foundation - REE, 2014. Amount Requested: \$110,859
2013	F. M. Capaldi and D. R. Berg. An Intelligent Infinitely Explorable Online Learning Environment. National Science Foundation - STTR Phase I, 2013. Amount Requested: \$223,734
2013	D. R. Berg. Application for Taft Manufacturing Engineering Professorship. University of Wisconsin - Stout, 2013. Amount Requested: \$25,325
2013	M. Veletzos, D. R. Berg, and F. M. Capaldi. Expanding an Online Engineering Learning Environment to a Diverse Population of Learners. National Science Foundation - TUES, 2013. Amount Requested: \$599,282
2012	D. R. Berg. Professional Development: Evaluation and Presentation of an Infinitely Explorable Online Learning System. University of Wisconsin - Stout, 2012. Amount Requested: \$3,094

## Service to the Field

2016–present	Founding Editor: The Journal of Open Engineering
2016–present	Secretary: Faculty Leadership Council, Engineers Without Borders USA
2014–present	Associate Editor: Directory of Open Access Journals, <a href="http://doaj.org/">http://doaj.org/</a>
2013–present	Trustee: <a href="http://handsonmechanics.org">handsonmechanics.org</a> (ASEE Mechanics Division)
2013–present	Director: ASEE Mechanics Division Executive Committee
2013–present	Reviewer: ASEE Annual Conference
2014	Session Moderator: ASEE Annual Conference
2014	Reviewer: International Conference on Transformations in Engineering Education
2014	Reviewer: Soft Robotics, Mary Ann Liebert Inc. Publishers
2012–2013	Reviewer: ASME Dynamic Systems and Control Conference

## Service to the University of Wisconsin - Stout

2015–present	Member: Research Services Steering Committee
2015–present	Alternate: Curriculum and Instruction Committee
2014–present	Member: Educational Activities Committee
	Academic Calendar Sub-Committee
	Credit Hour Definition Sub-Committee
2013–present	Advisor: Engineers Without Borders UW-Stout Chapter
2013–present	Member: Graduate Faculty
2013–present	Campus Representative: American Society for Engineering Education
2014–2015	Member: Discovery Center Steering Committee
2013–2015	Advisor: Baja SAE UW-Stout Chapter
2013–2014	Alternate: Graduate Education Committee
2013–2014	Tournament Director: FIRST LEGO League Regional Tournament
2013–2014	Advisor: UW-Stout Rocketry Club

## Service to the College of Science, Technology, Engineering, and Mathematics

2016	Member: Search and Screen Committee (College of STEM dean)
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## Service to the Engineering and Technology Department

2015–2016	Chair: Search and Screen Committee (mechanical engineering faculty position)
2013–present	Member: MS Manufacturing Engineering Advisory Board
2012–present	Member: BS Manufacturing Engineering Advisory Board
2014–2015	Member: Search and Screen Committee (3 engineering faculty positions)
2012–2013	Member: Bylaws Revision Committee

## Undergraduate Student Projects Advised

2014	“Design for Manufacturing of Hydroelectric Generator for Rural Malawi” (Mandela Washington Fellowship for Young African Leaders)
2014	“Snow Chair: A Device for Achieving Wheelchair Traction in Slippery Conditions”
2014	“Snow Sock: A Device for Achieving Wheelchair Traction in Slippery Conditions” (provisional patent)
2014	“An Add-On to Provide Automated Coffee Grinding to a Manual Burr Grinder”
2013–2014	“Design of a GUI and Positioning Control System for a Desktop Laser Welder”
2013	“Laser Welding Process Characterization”

## Curriculum Development

2015	New Course: Impacts of Engineering (ENGN-100)
2014–2015	New Program: B.S. Mechanical Engineering
2014	New Course: Control Theory (MFGE-365)
2014	New Course: Dynamics (MECH-292)

## Professional Development Activities

2016	Advancing Learning Through Evidence-Based STEM Teaching, Center for the Integration of Research, Teaching, and Learning, course completed
2015	NTLC Teaching Champs Writing Workshop
2014	EWB-USA/ASCE Global Leadership Program: Design Global, Engineer Local
2014	OPID Faculty College
2014–2016	NTLC Teaching Champions Program
2014	University Teaching 101, Johns Hopkins University, course completed
2014	Heart and Soul of Teaching Workshop, Nakatani Teaching and Learning Center
2013	Writing in the Sciences, Stanford University, course completed with distinction
2012–2013	First Year Faculty Program
2012	Attendance at 2012 ASEE North Midwest Section Conference
2012	New Instructor Workshop

## Affiliations

Wisconsin/Nicaragua Partners of the Americas  
Engineers Without Borders USA  
American Society for Engineering Education  
American Society of Mechanical Engineers  
Pi Tau Sigma (Honorary Mechanical Engineering Society)  
Tau Beta Pi (Honorary Engineering Society)

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