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	**PhD Mechanical Engineering**, University of Minnesota - Twin Cities
2011	**MS Mechanical Engineering**, University of Minnesota - Twin Cities Minor: Biomedical Engineering
2008	**BS Mechanical Engineering**, University of Wisconsin - Madison

Academic Positions

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

Peer Reviewed Journal Articles

2017 J. Dekarske and D. R. Berg. Path oriented powered wheelchair navigation assistance. *The Journal of Open Engineering*, 2017. under review

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 translumenal 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

2017 T. Lacksonen, S. Springer, and D.R. Berg. Global engineering projects from the Young African Leaders Initiative. In *Proceedings of the 2017 ASEE Annual Conference*, Columbus, OH, 2017. ASEE. under review

2017 T. Lee, D. R. Berg, and E. Buchanan. Exploring, documenting, and improving humanitarian service learning through Engineers Without Borders USA. In *Proceedings of the 2017 ASEE Annual Conference*, Columbus, OH, 2017. ASEE. under review

2017 D.R. Berg and M. Wigdahl. Work in progress: Assistive technology for freshmen design and k-12 outreach. In *Proceedings of the 2017 ASEE Annual Conference*, Columbus, OH, 2017. ASEE. under review

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. Reihsen. Low-cost, take-home, beating heart simulator for health-care education. In *Proceedings of Medicine Meets Virtual Reality 18*, Newport Beach, CA, 2011

Non-Peer Reviewed Papers

2017 D.R. Berg. Open research, open engineering, and the role of the university in society. In *Imagining Tomorrows University: Rethinking scholarship, education, and institutions for an open, networked era*, Rosemont, IL, 2017

2016 D.R. Berg, L. Fleischfresser, and K. Niemeyer. Open publishing in engineering. *The Journal of Open Engineering*, 2016. Editorial

Poster Presentations

2016	J. Dekarske and D. R. Berg. Path oriented powered wheelchair navigation assistance. In *Proceedings of the 2016 BMES Annual Meeting*, Minneapolis, MN, 2016. Biomedical Engineering Society
2016	W.V. Shi, D.R. Berg, C. Liu, and C. Anderson. Robotics REU in undergraduate engineering research. Menomonie, WI, 2016. Stout Summit
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

2016	UW-Stout Diversity Award (Team Category)
2016	Discovery Center Collaborator of the Year
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

2017 D. R. Berg. College Collaboration: Assistive Technology as a Freshmen Design Experience. University of Wisconsin - Stout, 2017. Amount Awarded: $2,000

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. Stary. 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	Member: Center for Open Science Preprint Advisory Group
2016–present	Director: engrXiv, the eprint server for engineering
2016–present	Founding Editor: The Journal of Open Engineering
2016–present	Secretary: Faculty Leadership Council, Engineers Without Borders USA
2013–present	Trustee: handsonmechanics.org (ASEE Mechanics Division)
2013–present	Director: ASEE Mechanics Division Executive Committee
2013–present	Reviewer: ASEE Annual Conference
2014–2016	Associate Editor: Directory of Open Access Journals, http://doaj.org/
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

2016–present	Member: Faculty Senate
2016–present	Member: BS Industrial Design Advisory Board
2015–present	Member: Research Services Steering Committee
2015–present	Alternate: Curriculum and Instruction Committee
2014–present	Member and Vice-Chair: 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

2013–present	Member: MS Manufacturing Engineering Advisory Board
2012–present	Member: BS Manufacturing Engineering Advisory Board
2016	Member: Search and Screen Committee (College of STEMM dean)

Service to the Engineering and Technology Department

2015–2016	Chair: Search and Screen Committee (mechanical engineering faculty position)
2014–2015	Member: Search and Screen Committee (3 engineering faculty positions)
2012–2013	Member: Bylaws Revision Committee

Undergraduate Student Projects Advised

2016	"Assistive Robot to Aid with Catheter Insertion"
2016	"3D Printing to Assist with Design Presentation"
2016	"Engineers Without Borders UW-Stout Chapter Information Standardization" (Honors Project)
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

2016	New Course: Machine Component Design (ME-342)
2016	New Course: Capstone I: Concurrent Design (ME-405)
2015	New Course: Impacts of Engineering (ETECH-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	Attendance at "A Culture of Ethics: Engineering for Human Dignity and the Common Good" conference
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

Biomedical Engineering Society
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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