Robert G. Landers, Ph.D.

Advanced Manufacturing Collegiate Professor of Mechanical Engineering
Department of Aerospace and Mechanical Engineering
University of Notre Dame
South Bend, Indiana 46556
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EDUCATION

Doctor of Philosophy in Mechanical Engineering, Advisor: A. Galip Ulsoy, University of Michigan, April 1997, GPA 7.90/9.00

Masters of Engineering in Mechanical Engineering, Advisor: Mark L. Nagurka, Carnegie Mellon University, May 1992, GPA 4.00/4.00

Bachelor of Science in Mechanical Engineering, Advisor: William N. Patton (deceased), University of Oklahoma, May 1990, GPA 3.81/4.00 (Summa Cum Laude)

POSITIONS

Advanced Manufacturing Collegiate Professor, University of Notre Dame (September 2021 – present)

Assistant Department Chair for Faculty Affairs, Department of Aerospace and Mechanical Engineering, University of Notre Dame (September 2021 – present)

Curators' Distinguished Professor, Missouri S&T (January 2018 – August 2021)

Program Manager, Dynamics, Controls, and Systems Diagnostics, Foundational Research in Robotics (Directors Award for Superior Accomplishment – Group), Leading Engineering for America's Prosperity, Health, and Infrastructure, Cyber Physical Systems, Future Manufacturing programs, National Science Foundation (September 2018 – September 2021)

Professor, Missouri S&T (September 2012 – January 2018)

Associate Chair for Graduate Affairs, Department of Mechanical and Aerospace Engineering, Missouri S&T (August 2010 – 2016, August 2017 – 2018)

Associate Professor, Missouri S&T (September 2006 – August 2012)

Assistant Professor, Missouri S&T (August 2000 – August 2006)

Visiting Professor, Xi'an University of Technology (June 2015 – present)

Research Investigator, Intelligent Systems Center, Missouri S&T (January 2001 – present)

Faculty Member, Manufacturing Engineering Education Program, Missouri S&T (September 2000 – present)

Assistant Research Scientist, University of Michigan (May 1997 – July 2000)

Graduate Research Assistant, University of Michigan (January 1994 – April 1997)

Graduate Teaching Assistant, University of Michigan (September 1992 – December 1994)

Graduate Research Assistant, Carnegie Mellon University (June 1991 – August 1991)

Graduate Teaching Assistant, Carnegie Mellon University (August 1990 – May 1992)

GRANTS ($7.2M in percent credit, $5.4M as PI)

1. Bristow, D.A. (PI) and Landers, R.G., MxD/Boeing, "Closed-Loop, Measurement Control for Enhanced Robotic Performance," $700,000, May 1, 2020 – October 31, 2020, (additional $350,000 in cost sharing from Missouri S&T).
2. Bristow, D.A. (PI) and Landers, R.G., Los Alamos National Laboratory, "Embedding Distributed Fiber Optic Sensors in Laser Deposition Modeling Metal Additive Manufactured Components," $35,154, September 16, 2019 – December 31, 2019.
3. Bristow, D.A. (PI), Landers, R.G., and Yin, Zhaozheng, The Boeing Company, "A Method for Change Management in Additive Manufacturing," $90,000, January 1, 2019 – December 31, 2020 (additional $41,500 in cost sharing from Missouri S&T).
4. Landers, R.G., National Science Foundation, "Intergovernmental Personnel Act (IPA) Assignment, $416,503, September 4, 2018 – September 3, 2020.
5. Brow, R. (PI), Bristow, D.A., and Landers, R.G., Honeywell Federal Manufacturing and Technology, "Future Glass Seals," $99,972, January 4, 2019 – August 31, 2019.
6. Bristow, D.A. (PI) and Landers, R.G., Honeywell Federal Manufacturing and Technology, "Frequency Response Inspection of Additively Manufactured Parts for Defect Identification," $95,000, October 1, 2018 – September 30, 2019.
7. Kimball, J.W. (PI), Ferdowsi, M., Landers, R.G., Park, J., Rui, B., and Shamsi, P., Department of Energy, "Enabling Extreme Fast Charging with Battery Storage," $2,822,958, October 1, 2018 – December 31, 2019 (additional $597,264 in cost sharing from Missouri S&T).
8. Landers, R.G., (PI), Bristow, D.A., Chandrashekhara, K., Chen, L., Dong, X., Leu, M.C., Liou, F.W., Pan, H., and Park, J., Department of Education, "GAANN: Doctoral Research and Training in Advanced Manufacturing," $1,218,326, October 1, 2018 – September 30, 2021 (additional $298,500 in cost sharing from Missouri S&T).
9. Landers, R.G. (PI) and Bristow, D.A., LMI Aerospace, "Volumetric Error Compensation for a Robotic Drilling System," $80,000, January 1, 2018 – December 31, 2019 (additional $44,000 in cost sharing from Missouri S&T).
10. Kinzel, E.C. (PI), Bristow, D.A., Brow, R., and Landers, R.G., Los Alamos National Laboratory, "Produce Optical Fiber Test Specimens," $69,409, June 25, 2018 – March 25, 2019.
11. Kinzel, E.C. (PI), Bristow, D.A., and Landers, R.G., Los Alamos National Laboratory, "Building and Configuring a Glass Additive Manufacturing System," $85,079, May 16, 2018 – September 30, 2018.
12. Landers, R.G., Honeywell Federal Manufacturing and Technology, "Summer Research Experience in Additive Manufacturing," $199,585, April 1, 2017 – March 31, 2021 (additional $57,522 in cost sharing from Missouri S&T).
13. Kinzel, E.C. (PI), Bristow, D.A., and Landers, R.G., Honeywell Federal Manufacturing and Technology, "Future Glass Seals," $49,972, January 31, 2018 – August 31, 2018.
14. Kinzel, E.C. (PI), Bristow, D.A., Landers, R.G, and Brow, R., Swarovski, "Dimensional Control and Materials Development for Additive Manufacturing of Glass," $176,648, August 29, 2017 – August 28, 2018.
15. Bristow, D.A. (PI) and Landers, R.G., Boeing/DMDII, "Virtually Guided Certification of Computer Numerically Controlled Machine Tools via Virtual Twin," $400,000, December 20, 2016 – December 19, 2018 (additional $400,000 in cost sharing from Missouri S&T).

16. Bristow, D.A. (PI) and Landers, R.G., The Boeing Company, "Iterative Process Correction in Incremental Sheet Forming," $120,000, January 1, 2017 – December 31, 2019 (additional $66,000 in cost sharing from Missouri S&T).
17. Landers, R.G. (PI) and Bristow, D.A., Automated Precision Inc., "Robotic Volumetric Error Compensation using Angular Measurements," $35,000, January 1, 2017 – December 31, 2017 (additional $19,250 in cost sharing from Missouri S&T).
18. Park, J. (PI), Kimball, J., and Landers R.G., National Science Foundation, "Optimal Energy Scheduling in Microgrids with Photovoltatic (PV) Generation and Energy Storage Systems," $315,301, September 1, 2016 – August 31, 2019 (additional $8,000 in REU supplement).
19. Bristow, D.A. (PI) and Landers, R.G., Edison Welding Institute (America Makes), Laser Directed Energy Deposition (L–DED) Process Monitor," $20,000, March 1, 2016 – August 31, 2016.
20. Kinzel, E., (PI), Bristow, D.A., and Landers, R.G., Honeywell Federal Manufacturing and Technology, "Frequency Response Inspection of Additively Manufactured Parts for Defect Identification," $252,278, December 1, 2015 – September 30, 2018.
21. Bristow, D.A. (PI), DeMars, K., Duan, L., Kinzel, E., Landers, R.G., Leu, M.C., Pan, H., Park, J., Pernicka, H., and Rovey, J., Department of Education, "GAANN: Doctoral Research and Training in Mechatronics," $885,834, August 16, 2015 – August 15, 2018 (additional $351,006 in cost sharing from Missouri S&T).
22. Park, J. (PI) and Landers, R.G., National Science Foundation, "Modeling and Control of Battery Aging," $412,559, August 1, 2015 – July 31, 2019.
23. Kinzel, E. (PI), Bristow, D.A., and Landers, R.G., National Science Foundation, "Glass Additive Manufacturing of Transform Optics," $300,000, August 1, 2015 – July 31, 2018 (additional $37,000 in REU supplements).
24. Bristow, D.A. (PI), Landers, R.G., and Leu, M., Caterpillar/DMDII "Integrated Part Variation Management," $276,287, March 2, 2015 – January 12, 2017 (additional $276,287 in cost sharing from Missouri S&T).
25. Leu, M.C. (PI), Bristow, D.A., Chen, L., Kinzel, E.C., Landers, R.G., Liou, F.W., Newkirk, J.W., and O'Malley, R.J., Honeywell Federal Manufacturing and Technology, "Metal Additive Manufacturing Materials Analysis for Missouri S&T," $4,425,487, May 1, 2015 – August 31, 2018.
26. Bristow, D.A. (PI) and Landers, R.G., GKN Aerospace, "Machine Tool Volumetric Error Compensation," $10,000, January 1, 2015 – December 31, 2015 (additional $5,250 in cost sharing from Missouri S&T).
27. Landers, R.G. (PI), Bristow, D.A., Chen, L., Hilmas, G.E., Kinzel, E., Leu, M.C., Liou, F.W., Newkirk, J., Pan, H., and Park, J., National Science Foundation, "REU Site: Additive Manufacturing," $415,000, April 1, 2015 – March 31, 2019.
28. Landers, R.G. (PI) and Bristow, D.A., Toyota, "Volumetric Error Compensation of a Deburring Robot," $14,907, January 15, 2015 – February 28, 2015.
29. Landers, R.G. (PI) and Bristow, D.A., Automated Precision Inc., "Adaptive Control of Laser Trackers," $40,000, August 1, 2014 – July 31, 2015 (additional $21,000 in cost sharing from Missouri S&T).
30. Landers, R.G. (PI) and Bristow, D.A., Herzan, "Development of a Vibration Isolation System," $127,330, September 1, 2013 – December 31, 2016.
31. Landers, R.G. (PI), Leu, M.C., and Gao, R. (University of Connecticut), National Science Foundation, "Student Travel Support for 2014 International Symposium on Flexible Automation," $25,000, September 1, 2013 – December 31, 2016.

32. Landers, R.G. (PI), Bristow, D.A., and Johnson, M. (Boeing), National Science Foundation, "GOALI: Volumetric Error Analysis of Machine Tools," $300,000 (additional $21,000 in REU supplements), August 1, 2013 – July 31, 2017.
33. Bristow, D.A. (PI), Landers, R.G., and Liou, F.W., National Science Foundation, "Iterative Process Control for Laser Metal Deposition," $272,875, June 1, 2013 – May 31, 2017 (additional $21,000 in REU supplements).
34. Bristow, D.A. (PI) and Landers, R.G., Bell Helicopter, "Robot Geometric Error Compensation," $100,000, February 1, 2013 – November 10, 2014 (additional $21,000 in cost sharing from Missouri S&T).
35. Landers, R.G. (PI) and Van Aken, D.C., The Boeing Company, GKN Aerospace, and Spirit Aerosystems, "Cryogenic Machining," $60,000, November 11, 2012 – November 10, 2014 (additional $25,750 in cost sharing from Missouri S&T).
36. Bristow, D.A. (PI) and Landers, R.G., The Boeing Company, "Volumetric Error Compensation Technology Development," $75,000, September 24, 2012 – April 30, 2013 (additional $25,000 in cost sharing from Automated Precision, Inc. and $50,000 in cost sharing from Missouri S&T).
37. Landers, R.G. (PI), Bristow, D.A., Chandrashekhara, K., Leu, M.C., Liou, F.W., Newkirk, J.W., and Rahman, M.N., Department of Education, "GAANN: Doctoral Research and Training in Direct Digital Manufacturing," $399,798, August 16, 2012 – August 15, 2016 (additional $133,266 in cost sharing from Missouri S&T).
38. Bristow, D.A. (PI) and Landers, R.G., The Boeing Company, "Machine Tool Volumetric Error Compensation," $200,000, November 11, 2011 – December 31, 2015 (additional $140,000 in cost sharing from Missouri S&T).
39. Landers, R.G., IST Rolla/Air Force Research Laboratory, "Novel Tool Wear Monitoring of Cutting Tools Using Neural Network Based Observers," $40,000, October 1, 2011 – June 30, 2012.
40. Landers, R.G., The Boeing Company and GKN Aerospace, "Machine Tool Volumetric Error Compensation," $36,000, September 15, 2010 – September 14, 2011 (additional $18,240 in cost sharing from Missouri S&T).
41. Landers, R.G. (PI), Bristow, D.A., Hilmas, G., Krishnamurthy, K., Leu, M.C., Liou, F.W., Newkirk, J.W., and Sheng, H., National Science Foundation, "REU Site: Additive Manufacturing," $400,000, July 15, 2010 – July 14, 2014 (additional $206,000 in cost sharing from Missouri S&T).
42. Landers, R.G. (PI) and Tang, L., Missouri Research Board, "Diagnostics and Control of Hydrogen Fuel Cell–Battery Systems," $20,000, January 1, 2010 – December 31, 2011.
43. Ferdowsi, M. (PI), Corns, S.M., Corzine, K.A., Crow, M.L., Dogan, F., Grasman, S.E., Hall, R.H., Kimball, J.W., Landers, R.G., Leu, M.C., Long, S.K., Rolufs, A.B., and Sheffield, J.W., Department of Energy, "Advanced Electric Drive Vehicle – A Comprehensive Education, Training, and Outreach Program," $5,000,000, September 1, 2009 – August 31, 2012 (additional $1,862,661 in cost sharing from Missouri S&T).
44. Crow, M. (PI), Anderson, H.U., Chandrashekhara, K., Dogan, F., Elmore. A.C., Grasman, S.E., Henthorn, K.S., Hosder, S., Koylu, U., Landers, R.G., Lee, S., Leu, M.C., Liou, F.W., Ludlow, D.K., McMillin, B.M., Newkirk, J.W., and Sheffield, J.W., Air Force Research Laboratory, "Advanced Military Installations that Integrate Renewable Energy and Advanced Energy Storage Technologies," $3,450,000, July 10, 2009 – July 9, 2012.
45. Leu, M.C. (PI), Hilmas, G.E., and Landers, R.G., National Science Foundation, "GOALI: Freeze–form Extrusion Fabrication of Composite Structures Using Ultra High

Temperature Ceramics and Refractory Metals," $300,000, July 1, 2009 – June 30, 2011 (additional $12,000 in REU supplement).

46. Sheffield, J.W., (PI), Ferdowsi, M., Grasman, S.E., Koylu, U., and Landers, R.G., Department of Transportation, "National University Transportation Center Equipment and Construction," $605,000, April 22, 2009 – June 30, 2010 (additional $2,027 in cost sharing from Missouri S&T).
47. Galecki, G. (PI), Summers, D., Aken, D.V., and Landers, R.G., Air Force Research Laboratory, "Waterjet Assisted Titanium Milling," $140,000, June 1, 2008 – May 31, 2010.
48. Sheffield, J.W. (PI), Grasman, S.E., Koylu, U., Landers, R.G., and Ferdowsi, M., General Motors, "EcoCAR: The NeXt Challenge," $148,232, May 1, 2008 – June 30, 2011.
49. Landers, R.G. (PI), Hall, R., and Sheng, H., National Science Foundation, "CCLI: Development and Evaluation of Simulation and Emulation Tools for Enhanced Manufacturing Automation Instruction," $149,988, April 15, 2008 – March 31, 2010.
50. Leu, M.C. (PI), Dogan, F., Hilmas, G.E., and Landers, R.G., Air Force Research Laboratory, "Direct Digital Manufacture of Near Net–Shape Parts with Ultra–High Temperature Ceramics," $187,212, September 1, 2007 – August 30, 2010.
51. Aken, D.V. (PI), Landers, R.G., and Galecki, G., Air Force Research Laboratory, "Metallurgical Characterization and Modeling of Thin Titanium Components," $80,000, January 1, 2007 – April 30, 2008.
52. Mishra, R. (PI) and Landers, R.G., Air Force Research Laboratory, "Implementation of FSW Intelligent Control," $150,000, January 1, 2007 – April 30, 2008.
53. Leu, M.C. (PI), Chandrashekhara, K.C., Landers, R.G., Liou, F., Mishra, R., OKeefe, M., Pommerenke, D., Summers, D.A., Tsai, H.L., and Zoughi, R., Air Force Research Laboratory, "Center for Aerospace Manufacturing Technologies Program Integration and Management," $2,274,706, June 1, 2005 – October 30, 2007.
54. Leu, M.C. (PI), Chandrashekhara, K.C., Landers, R.G. Liou, F., Mishra, R., OKeefe, M., Pommerenke, D., Summers, D.A., Tsai, H.L., and Zoughi, R., Air Force Research Laboratory, "Center for Aerospace Manufacturing Technologies Program Integration and Management," $152,800, April 29, 2004 – April 29, 2010.
55. Leu, M.C. (PI), Allada, V., Landers, R.G., Liou, F.W., and Saygin, C., National Science Foundation, "2006 NSF Design, Service and Manufacturing Research and Grantees Conference," $304,258, March 1, 2005 – February 28, 2007.
56. Landers, R.G., Air Force Research Laboratory, "Machining and Mechanical Characterization of Thin Titanium Components," $263,856, March 1, 2005 – December 31, 2006.
57. Mishra, R. (PI), Krishnamurthy, K., Landers, R.G., and Richards, V.L., Air Force Research Laboratory, "Intelligent Control and NDE for Defect–Free Complex Friction Stir Welded Joints," $568,439, June 1, 2004 – September 30, 2006.
58. Landers, R.G. (PI), Acar, L., Balakrishnan, S.N., Hilgers, M., Leu, M.C., Liou, F.W., McMillin, B., Okafor, A., and Saygin, C., National Science Foundation, "Development of a Parallel Machine Tool for Research and Education in Advanced Manufacturing," $166,058 (additional $12,000 REU supplement), August 15, 2003 – July 1, 2006 (additional $90,000 in cost sharing from Missouri S&T).
59. Leu, M.C. (PI), Landers, R.G., Bertrand, G., and Richards, V., Tel Med Technologies, "Solid Freeform Fabrication Based Dental Reconstruction: NSF STTR Phase II Subcontract," $250,000, June 1, 2003 – May 31, 2005.

60. Leu, M.C. (PI), Choi, J., Liou, F., Landers, R.G., McAdams, D., Midha, A., Tsai, H.L., Okafor, A., U.S. Department of Education, "Doctoral Research and Training in Virtual and Rapid Prototyping," $346,284, July 1, 2001 – June 30, 2004 (additional $86,571 in cost sharing from Missouri S&T).
61. Landers, R.G. (PI), Acar, L., Balakrishnan, S.N., Hilgers, M., Leu, M.C., Liou, F.W., McMillin, B., Okafor, A., and Saygin, C., Missouri Research Board, "Development of a Parallel Machine Tool for Research and Education in Advanced Manufacturing," $15,000, June 1, 2003 – May 31, 2004.
62. Tsai, H.L. (PI), Choi, J., Landers, R.G., Leu, M.C., Midha, A., Rahaman, M., Story, J., Van Aken, D., National Science Foundation, "Acquisition of a High–Power Laser System for Research and Education in Manufacturing and Materials Processing," $200,000, September 1, 2001 – August 31, 2003 (additional $275,000 in cost sharing from Missouri S&T).
63. Landers, R.G., Society of Manufacturing Engineers Initiation Grant, "Process Control of Laser Metal Deposition Systems," $14,964, November 1, 2002 – October 31, 2003.
64. Landers, R.G., Missouri Research Board, "Process Control of Laser Metal Deposition Manufacturing," $23,560, January 1, 2002 – December 31, 2002.
65. Saygin, C. (PI), Grasman, S., Landers, R.G., Leu, M.C., McAdams, D., and Rapier, S., Eagle Pitcher, "Electrode Counter Design for Thermal Batteries," $8,000, September 1, 2001 – December 31, 2001.
66. Landers, R.G., Missouri S&T Manufacturing Engineering Education Program, "Development of Internet–Accessible Manufacturing Courses," $15,500, January 1, 2001 – December 31, 2001.

PUBLICATIONS – REFERRED JOURNAL ARTICLES

(25 h-index and 2588 citations in Scopus; students I advised or co–advised are underlined)

1. Ma, L., Bristow, D.A., and Landers, R.G., 2021, "Interpolation and Extrapolation of Optimally-Fitted Kinematic Error Model for Five-Axis Machine Tools," *ASME Journal of Manufacturing Science and Engineering*, to appear.
2. Cullom, T., Lough, C., Altese, N., Bristow, D.A, Landers, R.G., Brown, B., Hartwig, T., Barnard, A., Blough, J., Johnson, K., and Kinzel, E.C., 2021, "Frequency Domain Measurements of Melt Pool Recoil Force using Modal Analysis," *Scientific Reports*, 11, 10959, https://doi.org/10.1038/s41598-021-90423-z.
3. Ajiboye, D.M., Kimball, J.W., Landers, R.G., and Park, J., 2021, "Computationally Efficient Battery Model for Microgrid Applications using the Chebyshev Spectral Method," *Computers and Chemical Engineering*, to appear.
4. Li, J., Ziehm W., Kimball, J.W., Landers, R.G., and Park, J., 2021, "Physical–Based Training Data Collection Approach for Data–Driven Lithium–ion Battery State–of–Charge Estimation," *Energy and AI*, to appear.
5. Riemann, B.J.C., Li, J., Adewuyi, K., Landers, R.G., and Park, J., 2021, "Control–Oriented Modeling of Lithium–Ion Batteries," *ASME Journal of Dynamic Systems, Measurement, and Control*, Vol. 143, No. 2, pp. 021002:1–18.
6. Ding, H., Gao, R., Isaksson, A., Landers, R.G., Parisini, T., and Yuan, Y., 2020, "State of AI–based Monitoring in Smart Manufacturing and Introduction to Focused Section," *IEEE/ASME Transactions on Mechatronics*, Vol. 25, No. 5, pp. 2143–2154.
7. Landers, R.G., Barton, K., Devasia, S., Kurfess, T., Pagilla, P., and Tomizuka, M., 2020, "A Review of Manufacturing Process Control," *ASME Journal of Manufacturing Science and Engineering*, Vol. 142, No. 11, pp. 110814:1–23.

8. Lough, C.S., Wang, X., Smith, C.C., Landers, R.G., Bristow, D.A., Drallmeier, J.A., Brown, B., and Kinzel, E.C., 2020, "Correlation of SWIR Imaging with LPBF 304L Stainless Steel Part Properties," *Additive Manufacturing*, Vol. 35, Article 101359 (12 pages).
9. Li, J., Landers, R.G., and Park, J., 2020, "A Comprehensive Single-Particle-Degradation Model for Battery State–of–Health Prediction," *Journal of Power Sources*, Vol. 456, Article 227950 (10 pages).
10. Lough, C.S., Escano, L.I., Qu, M., Smith, C.C., Landers, R.G., Bristow, D.A., Chen, L., and Kinzel, E.C., 2020, "In–Situ Optical Emission Spectroscopy of Selective Laser Melting," *SME Journal of Manufacturing Processes*, Vol. 53, pp. 336–341.
11. Tang, A., Li, S., Yang, G., Li, L., and Landers, R.G., 2019, "Wire Vibration Modeling and Experimental Analysis for Wire Saw Machining," *ASME Journal of Manufacturing Science and Engineering*, Vol. 141, No. 6, pp. 021003:1–10.
12. Li, S., Dong, Y., Li, Y., Li, P., Yang, Z., and Landers, R.G., 2019, "Geometrical Simulation and Analysis of Ball–End Milling Surface Topography," *International Journal of Advanced Manufacturing Technology*, Vol. 102, No. 5–8, pp. 1885–1900.
13. Li, H., Bristow, D.A., and Landers, R.G., 2019, "A Switched Estimation Strategy Based on Kalman Filtering for Compensating Laser Tracker ADM Shift," *Precision Engineering*, Vol. 56, pp. 395–403.
14. Sammons, P., Gegel, M., Bristow, D.A., and Landers, R.G., 2019, "Repetitive Process Control of Additive Manufacturing with Application to Laser Metal Deposition," *IEEE Transactions on Control Systems Technology*, Vol. 27, No. 2, pp. 566–575.
15. Sammons, P., Bristow, D.A., and Landers, R.G., 2019, "Two–Dimensional Modeling and System Identification of the Laser Metal Deposition Process," *ASME Journal of Dynamic Systems, Measurement, and Control*, Vol. 141, No. 2, pp. 021012:1–10 (**2020 Rudolf Kalman Best Paper Award**).
16. Ko, H–W., Bazzoli, P., Nisbett, J., Ma, L., Bristow, D.A., Landers, R.G., Chen, Y., Kapoor, S.G., and Ferriera, P.F., 2018, "Quasistatic Error Modeling and Model Testing for a 5–Axis Machine with a Redundant Axis," *Journal of Manufacturing Processes*, Vol. 31, pp. 875–883.
17. Peters, D., Drallmeier, J., Bristow, D.A., Landers, R.G., and Kinzel, E.C., 2018, "Sensing and Control in Glass Additive Manufacturing," *Mechatronics*, Vol. 56, pp. 188–197.
18. Luo, J., Hostetler, J.M., Gilbert, L., Bristow, D.A., Landers, R.G., Goldstein, J.T., Urbas, A.M., and Kinzel, E.C., 2018, "Additive Manufacturing of Transparent Fused Quartz," *Optical Engineering*, Vol. 57, No. 4, pp. 041408:1–8.
19. Li, J., Adewuyi, K., Lotfi, N., Landers, R.G., and Park, J., 2018, "A Single Particle Model with Chemical/Mechanical Degradation Physics for Lithium Ion Battery State of Health (SOH) Estimation," *Applied Energy*, Vol. 212, pp. 1178–1190.
20. Ma, L., Bazzoli, P., Sammons, P.M., Bristow, D.A., and Landers, R.G., 2018, "Modeling and Calibration of High–Order Joint–Dependent Kinematic Errors for Industrial Robots," *Robotics and Computer–Integrated Manufacturing*, Vol. 50, pp. 153–167.
21. Creamer, J., Bristow, D.A., and Landers, R.G., 2017, "Selection of Limited and Constrained Compensation Tables for 5–Axis Machine Tools," *International Journal of Advanced Manufacturing Technology*, Vol. 92, No. 1, pp. 1315–1327.
22. West, B.M., Capps, N.E., Urban, J.S., Pribe, J., Hartwig, T., Lunn, T., Brown, B., Bristow, D.A., Landers, R.G., and Kinzel, E.C., 2017, "Modal Analysis of Metal Additive Manufactured Parts for Health Screening," *Manufacturing Letters*, Vol. 13, pp. 30–33.

23. Li, W., Ghazanfari, A., Leu, M.C., and Landers, R.G., 2017, "Extrusion On–Demand for High Solids Loading Ceramic Paste in Freeform Extrusion Fabrication," *Virtual and Physical Prototyping*, Vol. 12, No. 3, pp. 193–205.
24. Lotfi, N., Landers, R.G., Li, J., and Park, J., 2017, "Reduced–Order Electrochemical Model–Based SOC Observer with Output Model Uncertainty Estimation," *IEEE Transactions on Control System Technology*, Vol. 25, No. 4, pp. 1217–1230.
25. Li, J., Lotfi, N., Landers, R.G., and Park, J., 2017, "A Single Particle Model for Lithium–ion Batteries with Electrolyte and Stress–Enhanced Diffusion Physics," *Journal of the Electrochemical Society*, Vol. 164, No. 4, pp. A874–A883.
26. Luo, J., Gilbert, L.J., Qu, Chuang, Landers, R.G., Bristow, D.A., and Kinzel, E.C., 2017, "Additive Manufacturing of Transparent Soda–Lime Glass using a Filament–Fed Process," *ASME Journal of Manufacturing Science and Engineering*, Vol. 139, No. 3, pp. 061006:1–8.
27. Li, S., Tang, A., Liu, Y., Wang, J., Cui, D., and Landers, R.G., 2017, "Analytical Force Modeling of Wire Saw Machining with Application to SiC Monocrystal Wafer Processing," *ASME Journal of Manufacturing Science and Engineering*, Vol. 139, No. 2, 041003:1–11.
28. Creamer, J., Sammons, P.M., Bristow, D.A., and Landers, R.G., 2017, "Table–Based Volumetric Error Compensation of Large 5–Axis Machine Tools," *ASME Journal of Manufacturing Science and Engineering*, Vol. 139, No. 1, 021011:1–11.
29. Fajri, P., Lotfi, N., Ferdowsi, M., and Landers, R.G., 2016 "Development of an Educational Small–Scale Hybrid Electric Vehicle (HEV) Setup," *IEEE Intelligent Transportation Systems Magazine*, Vol. 8, No. 2, pp. 8–21.
30. Lotfi, N., Zomorodi Moghadam, H., and Landers, R.G., 2016, "Active Disturbance Rejection Control for Voltage Stabilization in Open–Cathode Fuel Cells through Temperature Regulation," *Control Engineering Practice*, Vol. 56, pp. 92–100.
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12. Yelma, S., Miller, B., and Landers, R.G., 2004, "Automatic Feedback Control of Mechanical Gas Face Seals Via Clearance Control," *STLE Annual Meeting and Exhibition*, Toronto, Canada, May 15–19.
13. Boddu, M.R., Landers, R.G., Musti, S., Agarwal, S., Ruan, J–Z., and Liou, F.W., 2002, "System Integration and Real–Time Control Architecture of a Laser Aided Manufacturing Process," *Thirteenth Annual Solid Freeform Fabrication Symposium*, Austin, Texas, August 5–7, pp. 522–529.
14. Landers, R.G., Hilgers, M., Liou, F.W., and McMillin, B., 2002, "Object–Oriented Modeling and Fault Detection of a Powder Feeder for a Laser Metal Deposition System," *Thirteenth Annual Solid Freeform Fabrication Symposium*, Austin, Texas, August 5–7, pp. 271–278.

15. Boddu, M.R., Landers, R.G., and Liou, F.W., 2001, "Control of Laser Cladding Processes for Rapid Prototyping – A Review," *Twelfth Annual Solid Freeform Fabrication Symposium*, Austin, Texas, August 6–8, pp. 460–467.
16. Boddu, M.R., Musti, S., Landers, R.G., Agarwal, S., and Liou, F.W., 2001, "Empirical Modeling and Vision Based Control for the Laser Metal Deposition Process," *Twelfth Annual Solid Freeform Fabrication Symposium*, Austin, Texas, August 6–8, pp. 452–459.
17. Liou, F.W., Choi, J., Landers, R.G., Janardhan, V., Balakrishnan, S.N., and Agarwal, S., 2001, "Research and Development of a Hybrid Rapid Manufacturing Process," *Twelfth Annual Solid Freeform Fabrication Symposium*, Austin, Texas, August 6–8, pp. 138–145.
18. Koren, Y., Ulsoy, A.G., Landers, R.G., Mehrabi, M., Yip–hoi, D., and Pasek, Z., 2000, "NSF Engineering Research Center for Reconfigurable Machining Systems," *NSF Design and Manufacturing Research Conference*, Vancouver, British Columbia, Canada, January 3–6.

PUBLICATIONS – TECHNICAL REPORTS

1. Pribe, J.D., West, B.M., Bristow, D.A., Landers, R.G., and Kinzel, E.C., 2016, "Frequency Response Inspection of Additively Manufactured Parts for Defect Detect ion," *Honeywell Federal Manufacturing and Technologies LLC Final Report*, Missouri University of Science and Technology, Rolla, Missouri.
2. Landers, R.G., Van Aken, D.C., Johnson, M., Xu, L., and Nedic, C., 2015, "Cryogenic Machining of Thin Titanium Parts," *CAMT Industrial Consortium Final Report*, Missouri University of Science and Technology, Rolla, Missouri.
3. Landers, R.G., Tang, L., Freeman, P., Easley, S., and Nedic, C., 2012, "Volumetric Error Compensation," *CAMT Industrial Consortium Final Report*, Missouri University of Science and Technology, Rolla, Missouri.
4. Landers, R.G., Baumann, J., Mishra, R.S., Lederich, R.J., Talwar, R., Ballard, D., Turner, T., and Perkins, L., 2009, "Implementation of Friction Stir Welding Intelligent Process Control," *CAMT Task 6.1.1 Final Report*, AFRL Contract FA8650–04–C–704, Missouri University of Science and Technology, Rolla, Missouri.
5. Landers, R.G., Van Aken, D.C., Galecki, G., Young, K., Hanks, R., Helvey, A., Lederich, R.J., Mahaffey, D., and Calcaterra, J.R., 2008, "Machining and Metallurgical Characterization of Thin Titanium Components," *CAMT Task 2.1 Final Report*, AFRL Contract FA8650–04–C–704, Missouri University of Science and Technology, Rolla, Missouri.
6. Mishra, R.S., Krishnamurthy, K., Landers, R.G., Richards, V.L., Kalya, P., Zhao, X., Dixit, V., Phukan, H.J., Talwar, R., Lederich, R.J., Blunck, K., and Ballard, D., 2006, "Intelligent Control and NDE for Defect Free Complex FSW Joints," *CAMT Task 6.1 Final Report*, AFRL Contract FA8650–04–C–704, University of Missouri–Rolla, Rolla, Missouri.
7. Sandoval, J.E., Landers, R.G., and Ulsoy, A.G., 2001, "Reconfigurable CNC Lathe Simulation System," *ERC/RMS Technical Report*, University of Michigan, Ann Arbor, Michigan.
8. Johnikin, V.P., Min, B.–K., Landers, R.G., and Ulsoy, A.G., 2001, "Comprehensive, Modular Machine Tool Servomechanism Simulation," *ERC/RMS Technical Report*, University of Michigan, Ann Arbor, Michigan.

9. Moon, S–K., Landers, R.G., and Kota, S., 2000, "Error Analysis in Reconfigurable Machine Tool Design," *ERC/RMS Technical Report*, University of Michigan, Ann Arbor, Michigan.
10. Li, H., Landers, R.G., and Kota, S., 1999, "Joining Methods and Geometric Analysis of Machine Tools," *ERC/RMS Technical Report*, University of Michigan, Ann Arbor, Michigan.
11. Cakmacki, M., Landers, R.G., and Ulsoy, A.G., 1998, "Results on a Survey on Machine Tool Monitoring Systems," *ERC/RMS Technical Report*, University of Michigan, Ann Arbor, Michigan.

AWARDS

1. Rudolf Kalman Award: Best Paper in *ASME Journal of Dynamic Systems, Measurement, and Control* (2020)
2. Missouri S&T Intelligent Systems Center Distinguished Investigator Award (2019)
3. Elected Curators' Distinguished Professor (2018)
4. Missouri S&T Faculty Research Award (2016)
5. Top 20 Researcher at Missouri S&T (2016)
6. Elected ASME Fellow (2014)
7. Missouri S&T Faculty Excellence Award (2014)
8. Blackall Machine Tool and Gage Award: Best Paper in *ASME Journal of Manufacturing Science and Engineering* (2014)
9. Missouri S&T Global Learning, Outstanding Teaching Award of Excellence (2014)
10. Missouri S&T Office of Graduate Studies Friend of the Year (2013)
11. Missouri S&T Faculty Research Award (2011)
12. Missouri S&T Global Learning Outstanding Teaching Award of Excellence (2010)
13. Missouri S&T Pi Tau Sigma Silver Slide Rule Award for Teaching (2009)
14. Missouri S&T Faculty Excellence Award (2007)
15. Missouri S&T School of Engineering Innovative Teaching Award (2006)
16. Missouri S&T Academy of Mechanical and Aerospace Engineers Faculty Excellence Award (2006)
17. Missouri S&T Faculty Excellence Award (2005)
18. Missouri S&T Outstanding Teaching Award (2005)
19. Missouri S&T School of Engineering Teaching Excellence Award (2005)
20. Missouri S&T School of Engineering Innovative Teaching Award (2004)
21. Society of Manufacturing Engineer's M. Eugene Merchant Outstanding Young Manufacturing Engineer Award (2004)
22. Outstanding Paper Award, Third Place (with Jinming Liu), 38th *ASEE Midwest Section Meeting* (2003)
23. Missouri S&T Academy of Mechanical and Aerospace Engineers Faculty Teaching Excellence Award (2002)

TECHNICAL PRESENTATIONS (Dr. Landers Presented)

1. Volumetric Error Compensation of Manufacturing Equipment, University of Tennessee, Knoxville, Knoxville, Tennessee, March 3, 2020 (invited).

2. Modeling and Control of Laser Metal Deposition Processes, Pennsylvania State University, State College, Pennsylvania, February 27, 2020 (invited).
3. Control–Oriented Modeling and Estimation of Li Ion Batteries, University of South Florida, Tampa Bay, Florida, February 7, 2020 (invited).
4. Additive Manufacturing of Ceramics and Glass, University of Central Florida, Orlando, Florida, February 6, 2020 (invited).
5. Volumetric Error Compensation of Manufacturing Equipment, University of Washington, Seattle, Washington, January 14, 2020 (invited).
6. Controlling Li Ion Batteries: Advances in Battery Management Systems, University of Washington, Seattle, Washington, January 13, 2020 (invited).
7. Modeling and Control of Wire Saw Machining, University of Virginia, Charlottesville, Virginia, September 6, 2019 (invited).
8. Modeling and Control of Laser Metal Deposition Processes, Virginia Polytechnic Institute and State University, Blacksburg, Virginia, September 5, 2019 (invited).
9. Additive Manufacturing of Ceramics and Glass, North Carolina State University, Raleigh, North Carolina, September 4, 2019 (invited).
10. Modeling and Control of Wire Saw Machining, Illinois Institute of Technology, Chicago, Illinois, April 12, 2019 (invited).
11. Additive Manufacturing of Ceramics and Glass, Purdue University, West Lafayette, Indiana, April 11, 2019 (invited).
12. Modeling and Control of Laser Metal Deposition Processes, Notre Dame University, South Bend, Indiana, April 10, 2019 (invited).
13. Additive Manufacturing of Ceramics and Glass, University of Connecticut, New Storrs, Connecticut, March 1, 2019 (invited).
14. Control of Additive Manufacturing Processes, Rensselaer Polytechnic Institute, Troy, New York, February 28, 2019 (invited).
15. Modeling and Control of Laser Metal Processes, Rutgers University, New Brunswick, New Jersey, February 27, 2019 (invited).
16. Monitoring and Control for Additive Manufacturing Process Certification, *United States Air Force Additive Manufacturing Academic Symposium*, Dayton, Ohio, January 29–30, 2019 (invited).
17. Control of Additive Manufacturing Processes, Xidian University, Xi'an, China, July 10, 2018 (invited).
18. Control of Additive Manufacturing Processes, Xi'an University of Technology, Xi'an, China, July 6, 2018 (invited).
19. Advanced Manufacturing II: Equipment, *Workshop on Mechatronics and Intelligence in Manufacturing*, Shiv Nadar University, India, November 26–27, 2016 (invited).
20. Advanced Manufacturing I: Machining/Joining Processes, *Workshop on Mechatronics and Intelligence in Manufacturing*, Shiv Nadar University, India, November 26–27, 2016 (invited).
21. Advanced Manufacturing I: Additive Processes, *Workshop on Mechatronics and Intelligence in Manufacturing*, Shiv Nadar University, India, November 26–27, 2016 (invited).
22. Experimental and Numerical Studies of Wire Vibrations in Bonded Abrasive Wire Saw Processing, *International Symposium on Flexible Automation*, Cleveland, Ohio, August 1–3, 2016.
23. Force Modeling of Silicon Monocrystal Wire Saw Processing, *International Symposium on Flexible Automation*, Cleveland, Ohio, August 1–3, 2016.

24. Extrusion Based Additive Manufacturing using Explicit Model Predictive Control, *American Control Conference*, Boston, Massachusetts, July 6–8, 2016.
25. Machine Tool and Robot Volumetric Error Compensation, Huazhong University of Science and Technology, Wuhan, China, June 16, 2015 (invited).
26. Machine Tool and Robot Volumetric Error Compensation, Wuhan University of Technology, Wuhan, China, June 16, 2015 (invited).
27. Machine Tool and Robot Volumetric Error Compensation, Wuhan University, Wuhan, China, June 17, 2015 (invited).
28. Machine Tool and Robot Volumetric Error Compensation, Tianjin University, Tianjin, China, June 18, 2015 (invited).
29. Machine Tool and Robot Volumetric Error Compensation, Xi'an University of Technology, Xi'an, China, June 24, 2015 (invited).
30. Panelist, Forum on Advanced Manufacturing, *International Symposium on Advanced Manufacturing and Nanotechnology*, Medellin, Colombia, November 12–13, 2014 (invited).
31. Dynamic Modeling and Control of Manufacturing Processes, *International Symposium on Advanced Manufacturing and Nanotechnology*, Medellin, Colombia, November 12–13, 2014 (invited).
32. Benefits and Challenges of Manufacturing Process Control, *National Science Foundation–National Research Foundation United States–South Korea Collaborative Workshop on Advanced Manufacturing*, Reno, Nevada, August 11–12, 2014 (invited).
33. Effect of Paste Properties on Extrudate Freezing Time in Freeze–form Extrusion Fabrication Processes, *International Manufacturing Science and Engineering Conference*, Detroit, Michigan, June 9–13, 2014.
34. Additive Manufacturing Process Control, *Advanced Manufacturing Conference*, Troy, New York, April 22–23, 2014 (invited).
35. Additive Manufacturing Research Experience for Undergraduates, *National Science Foundation Workshop on Additive Manufacturing Education*, Arlington, Virginia, April 10–11, 2014 (invited).
36. Research in Machining Process Modeling and Control, Ecole Nationale Supérieure d'Arts et Métiers, Cluny, France, January 9, 2014 (invited).
37. Modeling and Control of Manufacturing Processes, Wuhan University, Wuhan, China, December 6, 2013 (invited).
38. Modeling and Control of Manufacturing Processes, Xi'an Jiaotong University, Xi'an, China, December 5, 2013 (invited).
39. Research in Machining Process Modeling and Control, Xi'an University of Technology, Xi'an, China, December 2, 2013 (invited).
40. Advances in Control of Additive Manufacturing Processes, National Institute of Standards and Technology, April 24, 2013 (invited).
41. Modeling and Control of Laser Deposition Processes, Wroclaw University of Technology, Wroclaw, Poland, November 27, 2012 (invited).
42. REU Site in Additive Manufacturing, *NSF Engineering Education Awardees' Conference*, Arlington, Virginia, March, 2012 (poster).
43. Manufacturing Process Control, Xi'an University of Technology, Xi'an, China, June 30, 2011 (invited).
44. REU Site in Additive Manufacturing, *NSF Engineering Education Awardees' Conference*, Reston, Virginia, March, 2011 (poster).

45. Implementation and Evaluation of a mini–CNC Rapid Development System, *NSF CCLI TUES Principle Investigator's Conference*, Washington, DC, January, 2011 (poster).
46. "Hierarchical Position–Contour Control of Linear Axes," *International Symposium on Flexible Automation*, Tokyo, Japan, July, 2010.
47. "Development and Initial Analysis of a Mini CNC Rapid Development System," *ASEE Annual Conference and Exhibition*, Louisville, Kentucky, June, 2010 (poster).
48. "Implementation and Evaluation of a Linear Axis Rapid Development System," *ASEE Annual Conference and Exhibition*, Austin, Texas, June, 2009 (poster).
49. "Titanium Machining," *Aerospace Manufacturing Technologies Research Conference*, Rolla, Missouri, May, 2009.
50. "Controls Research in Missouri S&T's MAE Department," *ASME Student Section Presentation*, Rolla, Missouri, March, 2009.
51. "Adaptive Control of Freeze–form Extrusion Fabrication Processes," *ASME Dynamic Systems and Controls Conference*, Ann Arbor, Michigan, October, 2008.
52. "Path Force Control for Friction Stir Welding Processes," *ASME Dynamic Systems and Controls Conference*, Ann Arbor, Michigan, October, 2008.
53. "Variable Powder Flow Rate Control in Laser Metal Deposition Processes," *ASME Dynamic Systems and Controls Conference*, Ann Arbor, Michigan, October, 2008.
54. "Titanium Machining," *Aerospace Manufacturing Technologies Research Conference*, Dayton, Ohio, June, 2008.
55. "Nonlinear Feed Effect in Machining Chatter Analysis," *ASME International Conference on Manufacturing Science and Engineering*, Atlanta, Georgia, October 2007.
56. "Empirical Dynamic Modeling of Friction Stir Welding Processes," *ASME International Conference on Manufacturing Science and Engineering*, Atlanta, Georgia, October 2007.
57. "Variable Powder Flow Rate Control in Laser Metal Deposition Processes," *Eighteenth Annual Solid Freeform Fabrication Symposium*, Austin, Texas, August 2007.
58. "Precision Motion Control Methodology for Complex Contours," *American Control Conference*, New York, New York, July 2007.
59. "Real–Time Force and Moment Estimation for Mechanical Gas Face Seal Systems Using Reduced–Order Kalman Filters," *American Control Conference*, New York, New York, July 2007.
60. "Design and Implementation of a Nonlinear Axial Force Controller for Friction Stir Welding Processes," *American Control Conference*, New York, New York, July 2007.
61. "Hierarchical Optimal Force–Position–Contour Control of Machining Processes: Part I – Controller Methodology," *American Control Conference*, Portland, Oregon, June 2005.
62. "Hierarchical Optimal Force–Position–Contour Control of Machining Processes: Part II – Illustrative Example," *American Control Conference*, Portland, Oregon, June 2005.
63. "Hierarchical Optimal Contour–Position Control of Motion Control Systems," *ASME International Mechanical Engineering Congress and Exhibition*, Anaheim, California, November 2004.
64. "Control of Powder Flow Rate in Laser Metal Deposition Processes," *ASME International Mechanical Engineering Congress and Exhibition*, Anaheim, California, November 2004.
65. "Integration of Animation, Simulation, and Experimentation in a Modular Control Laboratory," *38th ASEE Midwest Section Meeting*, Rolla, Missouri, September 2003.
66. "Modeling for the Control of the Laser Aided Manufacturing Process (LAMP)," *Fourteenth Annual Solid Freeform Fabrication Symposium*, Austin, Texas, August 2003.

67. "Process Control of Laser Metal Deposition Manufacturing – A Simulation Study," *Fourteenth Annual Solid Freeform Fabrication Symposium*, Austin, Texas, August 2003.
68. "Hierarchical Optimal Control of a Turning Process – Linearization Approach," *American Control Conference*, Denver, Colorado, June 2003.
69. "Output Feedback Force Control for a Parallel Turning Operation," *American Control Conference*, Denver, Colorado, June 2003.
70. "Machining Process Monitoring and Control: The State–of–the–Art," *ASME International Mechanical Engineering Congress and Exposition*, New Orleans, Louisiana, November 2002.
71. "Process Analysis and Control of Machining Operations," *Washington University Mechanical Engineering Departmental Seminar*, Saint Louis, Missouri, April 2002 (invited).
72. "Robust Machining Force Control with Process Compensation," *ASME International Mechanical Engineering Congress and Exposition*, New York City, New York, November 2001.
73. "Model–Based Machining Force Control," *ASME International Mechanical Engineering Congress and Exposition*, Orlando, Florida, November 2000.
74. "A New Paradigm in Machine Tools: Reconfigurable Machine Tools," *Japan–USA Symposium on Flexible Automation*, Ann Arbor, Michigan, July 2000.
75. "Reconfigurable Machine Tools," *The Engineering Research Center for Reconfigurable Machining Systems Technical Advisory Committee Meeting*, Ann Arbor, Michigan, October 1999.
76. "Stability Analysis of Model–Based Machining Force Controllers," *American Control Conference*, San Diego, California, June 1999.
77. "Reconfigurable Machine Tools," *The Engineering Research Center for Reconfigurable Machining Systems Technical Advisory Committee Meeting*, Ann Arbor, Michigan, October 1998.
78. "Supervisory Machining Control: Design and Experiments," *CIRP General Assembly*, Athens, Greece, August 1998.
79. "Supervisory Machining Control on an Open–Architecture Machining System," *University of Michigan College of Engineering Manufacturing Seminar*, Ann Arbor, Michigan, March 1997 (invited).
80. "Chatter Analysis of Machining Systems with Nonlinear Force Processes," *ASME International Mechanical Engineering Congress and Exposition*, Atlanta, Georgia, November 1996.
81. "Machining Force Control Including Static, Nonlinear Effects," *Japan–USA Symposium on Flexible Automation*, Boston, Massachusetts, July 1996.
82. "Sub–Optimal Trajectory Planning of a Robotic Manipulator," *Carnegie Mellon University Mechanical Engineering Departmental Seminar*, Pittsburgh, Pennsylvania, February 1992.
83. "Optimal Control of a Highly Flexible Light–Weight Beam," *University of Oklahoma Undergraduate Research Day*, Norman, Oklahoma, April 1990.
84. "PD Control of a Highly Flexible Two–Link Beam," *University of Oklahoma AIAA/ASME Symposium X*, Norman, Oklahoma, February 1990.

COURSE INSTRUCTION

Actuators (20 hour short course at ESIGELEC in Rouen, France)

Fall 2016: 25 students
Fall 2015: 27 students
Fall 2014: 25 students
Spring 2014: 25 students
Fall 2012: 18 students
Fall 2011: 21 students
Fall 2010: 18 students
Fall 2009: 8 students

Automatic Control of Dynamic Systems (undergraduate)
Spring 2017: 38 students and overall student evaluation of 2.8/4.0
Spring 2013: 53 students and overall student evaluation of 3.2/4.0
Fall 2012: 46 students and overall student evaluation of 2.4/4.0
Fall 2011: 58 students and overall student evaluation of 3.0/4.0
Fall 2010: 52 students and overall student evaluation of 2.7/4.0
Fall 2007: 72 students and overall student evaluation of 2.7/4.0
Spring 2006: 36 students Manand overall student evaluation of 3.4/4.0
Spring 2005: 28 students and overall student evaluation of 3.5/4.0
Spring 2004: 49 students and overall student evaluation of 3.4/4.0
Spring 2003: 71 students and overall student evaluation of 3.2/4.0
Spring 2002: 19 students and overall student evaluation of 3.1/4.0

Computer Control of Manufacturing Systems (graduate; University of Michigan)
Spring 2000: 12 students and overall student evaluation of 4.17/5.0

Introduction to Dynamics and Vibrations (undergraduate; University of Michigan)
Summer 1998: 34 students (student evaluations not given)
Fall 1999: 87 students and overall student evaluation of 4.34/5.0

Modeling and Analysis of Dynamic Systems (undergraduate)
Fall 2016: 57 students and overall student evaluation of 2.2/4.0
Fall 2015: 32 students and overall student evaluation of 3.2/4.0
Fall 2014: 37 students and overall student evaluation of 2.4/4.0
Fall 2013: 48 students and overall student evaluation of 2.0/4.0
Fall 2009: 58 students and overall student evaluation of 3.0/4.0
Summer 2009: 12 students (student evaluations not given)
Fall 2008: 50 students and overall student evaluation of 2.8/4.0
Summer 2008: 17 students (student evaluations not given)
Summer 2006: 14 students (student evaluations not given)

Manufacturing Equipment Automation (restructured; graduate; internet–accessible)
Spring 2014: 22 students (4 off–campus) and overall student evaluation of 2.9/4.0
Fall 2011: 16 students (4 off–campus) and overall student evaluation of 3.0/4.0
Spring 2010: 10 students (2 off–campus) and overall student evaluation of 3.6/4.0
Spring 2009: 7 students (2 off–campus) and overall student evaluation of 3.8/4.0
Spring 2008: 13 students (1 off–campus) and overall student evaluation of 3.7/4.0
Spring 2007: 9 students (3 off–campus) and overall student evaluation of 3.6/4.0
Spring 2006: 20 students (1 off–campus) and overall student evaluation of 3.3/4.0

Fall 2004: 23 students (4 off–campus) and overall student evaluation of 3.3/4.0
Fall 2003: 8 students and overall student evaluation of 3.5/4.0
Fall 2002: 13 students and overall student evaluation of 3.6/4.0
Summer 2002: 11 students (student evaluations not given)
Fall 2001: 16 students (3 off–campus) and overall student evaluation of 3.4/4.0
Spring 2001: 21 students (1 off–campus) and overall student evaluation of 3.0/4.0

Mechanical and Aerospace Control Systems (graduate; internet–accessible starting 2003)
Fall 2009: 15 students (4 off–campus) and overall student evaluation of 3.5/4.0
Fall 2006: 10 students (3 off–campus) and overall student evaluation of 4.0/4.0
Fall 2003: 21 students (3 off–campus) and overall student evaluation of 3.1/4.0
Fall 2000: 11 students and overall student evaluation of 3.8/4.0

Mechatronics (developed; graduate; internet accessible starting 2011)
Spring 2015: 29 students (2 off–campus) and overall student evaluation of 3.3/4.0
Spring 2013: 20 students (5 off–campus) and overall student evaluation of 3.5/4.0
Spring 2011: 17 students (2 off–campus) and overall student evaluation of 3.8/4.0
Spring 2010: 21 students and overall student evaluation of 2.8/4.0
Spring 2009: 11 students and overall student evaluation of 3.7/4.0
Spring 2008: 17 students and overall student evaluation of 3.2/4.0
Spring 2007: 15 students and overall student evaluation of 3.4/4.0
Fall 2005: 16 students and overall student evaluation of 3.2/4.0

Modeling and Control of Manufacturing Processes (developed; graduate; internet–accessible)
Spring 2012: 9 students (1 off–campus) and overall student evaluation of 2.8/4.0
Fall 2010: 4 students and overall student evaluation of 2.5/4.0
Fall 2008: 5 students and overall student evaluation of 4.0/4.0
Fall 2006: 5 students (1 off–campus) and overall student evaluation of 2.8/4.0
Fall 2005: 10 students and overall student evaluation of 3.6/4.0
Fall 2004: 6 students and overall student evaluation of 4.0/4.0
Fall 2002: 8 students and overall student evaluation of 3.6/4.0
Fall 2001: 11 students (1 off–campus) and overall student evaluation of 3.5/4.0

EMPHASIS AREAS AND GRADUATE CERTIFICATES

Control Systems Emphasis in Aerospace Engineering (2007, developed)
Control Systems Emphasis in Mechanical Engineering (2007, developed)
Manufacturing Automation Emphasis in Mechanical Engineering (2007, developed)
Graduate Certificate in Control Systems (2007, developed)
Graduate Certificate in Manufacturing Automation (2007, developed)

STUDENT ADVISING

Post–Doctoral Researchers
1. Tang Lie (2009–2011)

Visiting Scholars

1. Dr. Arup Nandi, Research Fellow, Indo–US Postdoctoral Scholar, Central Mechanical Engineering Research Institute, West Bengal, India (2/14–2/15)
2. Dr. Aofei Tang, Professor, Xi'an University of Technology, Xi'an, China (1/14–12/14)
3. Dr. Shujuan Li, Professor, Xi'an University of Technology, Xi'an, China (1/10–12/10)

Doctoral Students

1. Mitchel Woodside: Estimation and Control of Robotic Machining Systems (Douglas A. Bristow co–advisor)
2. Brody Riemann: Optimal Charging and State of Health Estimation for Li Ion Batteries (Jonghyun Park co–advisor)
3. Joseph Fischer: Control of Incremental Sheet Forming Processes (Douglas A. Bristow major advisor)
4. Andrew Lang: Part Change Management of Selective Laser Melting Processes (Douglas A. Bristow major advisor)
5. Xin Wang: Modeling and Control of Selective Laser Melting of 304L Stainless Steel (Douglas A. Bristow co–advisor)
6. Kasim Adewuyi: Charging Methodology for Li Ion Batteries (Jonghyun Park co–advisor)
7. Michelle Gegel: Morphology Control of Laser Metal Deposition Processes (Douglas A. Bristow co–advisor)
8. Patrick Bazzoli: Geometric Error Compensation of Machining Processes (Douglas A. Bristow major advisor)
9. Le Ma: Robot Volumetric Error Compensation (2019, Douglas A. Bristow co–advisor)
10. Jennifer Creamer: Machine Tool Volumetric Error Compensation (2017, Douglas A. Bristow major advisor)
11. Patrick Sammons: Repetitive Process Control of Additive Manufacturing with Application to Laser Metal Deposition (2016, Douglas A. Bristow major advisor)
12. Nima Lotfi: Modeling and Control of Fuel Cell–Battery Hybrid Energy Sources (2016)
13. Mingyang Li: Modeling, Analysis, and Simulation for Aqueous–Based Ceramic Pastes in Freeze–form Extrusion Fabrication Processes (2016, Ming C. Leu co–advisor)
14. Hesam Zomorodi Moghadam: Hierarchical Control of Complex Manufacturing Processes (2015)
15. Lie Tang: Layer–to–Layer Control of Laser Metal Deposition Processes (2009)
16. Haojiong Zhang: Modeling, Estimation, and Control of Mechanical Gas Face Seal Systems (2006, Bradley A. Miller major advisor)

Masters Students

1. Emilio Perez: Optimal Control of Motion Systems for Manufacturing Equipment (Douglas A. Bristow major advisor)
2. Tristan Cullom: Modal Analysis as Non–Destructive Testing Technique for Additively Manufactured 304L Stainless Steel (2020, Douglas A. Bristow co–advisor)
3. He Li: Thermal Error Geometric Compensation of Robots and Machine Tools (2019, Douglas A. Bristow major advisor)
4. Luke Gilbert: Design and Fabrication of a System for the Additive Manufacturing of Transparent Glass (2016, Douglas A. Bristow major advisor)
5. Aaron Thornton: Freeze–form Extrusion Fabrication of Boron Carbide (2014, Ming C. Leu major advisor)
6. Patrick Sammons: Height Dependent Laser Metal Deposition Process Modeling (2012, Douglas A. Bristow major advisor)

7. Derek Brown: Control Oriented Thermal Modeling of Lithium Ion Batteries (2012)
8. Blanca Ollero Loranca: Thermal Modeling and Analysis of Polymer Electrolyte Membrane Open Cathode Fuel Cells (2012)
9. Thomas Oaks: Filtering, Modeling, and Control of Axial Force Signals in Friction Stir Welding Processes (2009)
10. Parimal Kulkarni: Development of Extrusion on Demand for Ceramic Freeze–form Extrusion Fabrication Processes (2009, Ming C. Leu major advisor)
11. Michael Fleming: General Tracking Control of Linear Axes for an Educational Rapid Development System and a Kinematically Coupled System (2009)
12. Xiyue Zhao: Modeling and Control of Freeze–form Extrusion Fabrication (2007, Ming C. Leu major advisor)
13. Xin Zhao: Empirical Dynamic Modeling and Nonlinear Force Control of Friction Stir Welding (2007)
14. Peng Guo: Chatter Suppression in Two–Tool Turning Operations with Spindle Speed Variation Method (2006)
15. Mike Mason: Modeling and Control of Freeze–Form Extrusion Fabrication of Ceramics (2006, Ming C. Leu major advisor)
16. Matt Goska: Development of a Novel Parallel Machine Tool (2005)
17. Sachin Yelma: Modeling and Control Strategies for Mechanical Gas Face Seals (2004, Bradley A. Miller co–advisor)
18. Pradeep Nambiath: Discrete Event Systems: A New Control Approach and Integrated Design and Control (2004, Daniel McAdams co–advisor)
19. Brandon Hencey: Analytical Studies of Regenerative Chatter Suppression in Turing Operations Through Spindle Speed Variation (2003)
20. Jinming Liu: Virtual and Experimental Automation and Control Laboratories (2003)
21. Boddu Mallikbayjuna Rao: System Integration and Control–Oriented Modeling of the Laser Aided Manufacturing Process (2003)
22. Raghusimha Subhakara: Force Control of Parallel Machine Tools (2003)
23. Sung Kim: Robust Machining Force Control for Face Milling Operations (2000, Galip A. Ulsoy co advisor, University of Michigan)

PROFESSIONAL AFFILIATIONS

American Society for Engineering Education – Member (joined 1999)
American Society of Mechanical Engineers – Fellow (joined 1990)
Institute of Electrical and Electronics Engineers – Senior Member (joined 1994)
North American Manufacturing Research Institute – Member (joined 2004)
Society of Manufacturing Engineers – Senior Member (joined 1994)
Pi Tau Sigma – Member (joined 1987)

PROFESSIONAL SERVICE

ASME Dynamic Systems and Control Division

Executive Committee Secretary (2013–2016), **Member** (2016–2018), **Vice Chair** (2018–2019), **Chair** (2019–2020), and **Past Chair** (2020–2021)

Dynamic Systems and Controls Conference: Student Best Paper Committee member (2014)

American Control Conference: Program Representative (2009)

Manufacturing Systems Technical Panel: Chair (1997–2000) and Member

ASME Manufacturing Engineering Division

ASME International Mechanical Engineering Congress and Exhibition: Program Co–Representative (2006)
Manufacturing Equipment Technical Committee: Chair (2004–2006), Co–Chair (2002–2004), and Member

SME North American Manufacturing Research Institution

Scientific Committee Member: Smart Manufacturing Track co–chair (2018–present)

Journal Editorial Service

Mechatronics (Associate Editor 2017–present)
IEEE/ASME Transactions on Mechatronics, guest editor for focused section on *AI-based Monitoring in Smart Manufacturing* (2020)
ASME Journal of Manufacturing Science and Engineering (Associate Editor 2010–2014)
ASME Journal of Dynamic Systems, Measurement, and Control (Associate Editor 2009–2012)
IEEE Transactions on Control Systems Technology (Associate Editor 2006–2012)

Conference Committees

American Control Conference (Program Committee Member: 2005 and 2009)
ASME Dynamic Systems and Control Conference (Program Committee Member: 2014)
IEEE Conference on Control Applications (Program Committee Member: 2011 and 2012)
IEEE Multi–Conference on Systems and Control (Program Committee Member: 2015)
International Symposium on Flexible Automation (Advisory Committee Member: 2020)
International Symposium on Flexible Automation (Advisory Committee Member: 2018)
International Symposium on Flexible Automation (Program Chair: 2016)
International Symposium on Flexible Automation (Program Co–Chair: 2014)
International Symposium on Flexible Automation (Program Committee Member: 2006, 2008, 2010, 2012)
Japan–USA Symposium on Flexible Automation (Program Committee Member: 2002 and 2004)
National Science Foundation's Design, Service and Manufacturing Research and Grantees Conference (Program Committee Member: 2006)
North American Manufacturing Research Conference (Program Committee Member: 2019)

Technical Conference Symposia: Coordinate Reviews, Organize, and Chair Sessions

American Control Conference
ASEE Midwest Section Meeting
ASME Design Engineering Technical Conferences
ASME Dynamic Systems and Control Conference
ASME International Mechanical Engineering Congress and Exhibition
International Symposium on Flexible Automation
Japan–USA Symposium on Flexible Automation
Solid Freeform Fabrication Symposium

Reviewer

Proposals
Funds for Scientific Research (FNRS Belgium)
Murdoch Foundation
National Science Foundation
NYUAD Research Enhancement Fund

Oklahoma Center for the Advancement of Science and Technology
South Dakota EPSCoR
Research Grants Council of Hong Kong
University of Missouri Research Board

Journal Articles

Additive Manufacturing
ASME Journal of Dynamic Systems, Measurement, and Control
ASME Journal of Manufacturing Science and Engineering
CIRP Journal of Manufacturing Science and Technology
IEEE Control Systems Magazine
IEEE Transactions on Automation Science and Engineering
IEEE Transactions on Control System Technology
IEEE Transactions on Education
IEEE Transactions on Industrial Informatics
IEEE/ASME Transactions on Mechatronics
IEEE Transactions on Neural Networks
International Journal of Advanced Manufacturing Technology
International Journal of Engineering Education
International Journal of Engineering, Science and Technology
International Journal of Machine Tools and Manufacture
International Journal of Non–Linear Mechanics
International Journal of Precision Engineering and Manufacturing
International Journal of Smart Engineering System Design
Iranian Journal of Electrical and Computer Engineering
Journal of Control Science and Engineering
Journal of the Electrochemical Society
Journal of Materials Processing Technology
Journal of Mechanical Engineering Sciences: *Proceedings of the IMechE – Part C*, *Mechatronics*
Journal of Robotics
Machining Science and Technology
Materials Science in Semiconductor Manufacturing
Powder Technology
Precision Engineering
Proceedings of the Royal Society A, *Research in Engineering Design*
SME Journal of Manufacturing Systems
Tribology International
Virtual Reality Journal

Conference Papers

American Control Conference
ASEE Annual Conference and Exhibition
ASME Design Engineering Technical Conference
ASME Dynamic Systems and Control Conference
ASME International Mechanical Engineering Congress and Exhibition
ASME Manufacturing Science and Engineering Conference
IEEE/ASME International Conference on Advanced Intelligent Mechatronics
IEEE Conference on Decision and Control
IEEE International Conference on Robotics and Automation
International Solid Freeform Fabrication Symposium
International Symposium on Flexible Automation
Japan–USA Symposium on Flexible Automation
North American Manufacturing Research Conference

Organized and Hosted University of Michigan Manufacturing Seminar (1999–2000)

Sensor Fused Intelligent Monitoring System for Machining (SIMON)

Administered Intelligent Manufacturing Systems (IMS) project SIMON for the United States (May 1997 – December 1998).

UNIVERSITY SERVICE

Department Service

Promotion and Tenure Committee (2013–2018)
Hiring Task Force (Chair, 2013)
Advisory Committee (2011–2018)
Web and Media Presence Committee (2012–2018)
Strategic Planning Committee (2011)
Manufacturing Program Administrative Review Committee (Chair, 2011)
Associate Chair for Graduate Affairs (2010–2016, 2017– 2018)
Faculty Search Committee (Member)
Department Chair Search Committee (Member, 2009–2010)
Teaching Instructor Search Committee (Chair, 2009–2010)
Laboratory Committee (Member, 2009–2018)
FE Exam Review (4/7/08, 10/23/08, 10/21/09, 4/12/10, 3/16/12)
Building Transition Committee (Member, 2007–2009)
Curriculum Committee (Member, 2006–2008, 2010–2018)
Academy Communications Committee Faculty Liaison (2005–2012)
Graduate Committee (Member, 2005–2010)
Seminar Committee (Member, 2004–2008)
Professional Degree Recipient Host: Richard D. Baumann (December 20–21, 2002)
Web Faculty Advisor (2001–2004)
Ad Hoc Senior Design Course Committee (Member, 2002–2003)
Ad Hoc Non–Thesis Masters Degree Committee (Member, 2001–2002)
Computer Committee (Member, 2001–2004)
Supervised Summer High School Student Program (2001: four students; 2002: eight students; 2003: nine students; 2006: four students)
Mechanics, Systems, and Design Committee (Member, 2000–present; Chair, 2006–2007)
Manufacturing Committee (Member, 2000–present; Chair, 2007–2008)

Campus Service

Proposal Writing Bootcamp Panelist (March 2018)
Miner Leadership Weekend Faculty Panelist (February 2018)
Grant Writer and Illustrator Search Committees (Member 2015–2017)
Graduate Funding Task Force (Chair, 2016)
Dean's Scholars Committee (Member, 2016)
College of Engineering and Computing Associate Dean for Research and External Relations Search Committee (Member, 2015)
Manufacturing Signature Area Faculty Search Committee (Member, 2015)
Distance Student Doctoral Residency Requirements Committee (Member, 2014)
Best–in–Class Strategic Areas for Investment Committee (Member, 2013–2014)
Missouri S&T Strategic Planning Lever 4.5 Committee (Member, 2013–2014)
Graduate Student Organization Panelist (2013)
New Graduate Student Orientation Panelist (2013, 2014)

Chancellor Fellowship Poster Judge (2012)
Student Conduct Committee (Member, 2011–2018)
Speech Communication Center Director Search Committee (Member, 2011)
EMSE Research Open House Judge (2011, 2012)
Tuition and Residence Committee (Member, 2010–2018)
New Student Orientation (8/19/10)
Global Learning Presentation: Mechatronics (2009, 2010, 2011)
Intelligent Systems Center Student Poster Competition Judge (2007, 2009, 2011)
Intelligent Systems Center Student Paper Reviewer (2011, 2012)
Faculty Search Committee (Member, 2007–2008, Electrical and Computer Engineering Department)
Society of Manufacturing Engineers Faculty Advisor (2007–2012)
Parking Committee (Member, 2005–2007)
GTA Workshop Assessor (8/17/04, 8/16/05, 8/15/06, 1/4/07, 8/21/08, 1/9/09, 8/21/09, 1/7/11, 8/14/14)
Grant Writing Workshop Panelist (March 2, 2004)
Campus Honorary Degree Committee (Member, 2004)
Scholar's Day Interviewer (December 6, 2003; December 2, 2006)
Career Fair Reception Attendee (February 11, 2003; September 24, 2003)
EIT Exam Proctor (April 21, 2001)
Saint Louis Rolla Night Attendee (November 1, 2000)