CURRICULUM VITAE

Arif S. Malik, PhD

Associate Professor
Department of Mechanical Engineering
The Erik Jonsson School of Engineering and Computer Science
The University of Texas at Dallas
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SUMMARY:

Research Areas: Efficient computational mechanics modeling, uncertainty analysis, manufacturing process prediction, reliability-based structural design, laser processing of additive and wrought metals, advanced manufacturing of flat-rolled metals.

Teaching Areas: Reliability-Based Design, Materials Design and Manufacturing, Finite Element Analysis, Computational Design and Analysis, Programming, Multidisciplinary Design Optimization.

EDUCATION

- **Ph.D.**, Mechanical Engineering, Wright State University, Dayton, OH, USA (2007)
  Advisor: Ramana V. Grandhi, Ph.D.;
  Dissertation: *Rolling Mill Optimization using an Accurate and Rapid New Model for Mill Deflection and Strip Thickness Profile*
- **M.S.**, Electrical Engineering, Wright State University, Dayton, OH (2001)
- **B.S.**, Mechanical Engineering, Wright State University, Dayton, OH (1994)

ACADEMIC APPOINTMENTS

July, 2015 – Present	*Associate Professor, Dept. of Mechanical Engineering,* The Erik Jonsson School of Engineering and Computer Science The University of Texas at Dallas, Richardson, TX, USA
July, 2009 – Jun, 2015	*Assistant Professor, Dept. of Aerospace & Mechanical Engineering,* Parks College of Engineering, Aviation and Technology Saint Louis University, St. Louis, Missouri, USA
May, 2007 – June, 2009	*Postdoctoral Researcher, Dept. of Mechanical Engineering,* Wright State University, Dayton, Ohio, USA

PAST PROFESSIONAL EXPERIENCE

Jan., 2004 - 2015	*Engineering Consultant* Optimum Process Technology & Engineering Co. (OPTEC) Ltd.
March, 2000 – Dec., 2004	*Start-Up Co-Founder, and Manager of Product & Process Applications* Controlling Technology International Inc., Centerville, OH
Feb., 1997 – March, 2000	*Process Engineer* ARMCO (now AK) Research & Technology., Middletown, OH

Aug., 1995 – Feb., 1997 *Applications Engineer*
Lau Division of Tomkins Industries, Dayton, OH

AWARDED RESEARCH FUNDING

- Total Funding Received: $1,648,069
- Total Funding Received, Tenure -Track: $1,014,069 (as Principal Investigator)
- Total External Funding: $1,622,833
- Total External Funding, Tenure -Track: $988,833 (as Principal Investigator)

AWARDED RESEARCH FUNDING DETAILS

1. National Science Foundation (NSF): *GOALI: Improved Tool-Path Design to Reduce Assembly Costs of High-Speed-Machined Wrought and Additively Manufactured Metal Parts*, 2018-21, $459,000; awarded by Manufacturing, Machines and Equipment program (CMMI-1762722). Role: PI.
2. National Science Foundation (NSF): *CAREER: Highly-Efficient Dynamic Prediction Models for Quality Improvement in Cold Rolling*, 2015-20, $500,000; awarded by Manufacturing, Machines and Equipment program (CMMI-1454405). Role: PI.
3. National Science Foundation (NSF): *GOALI: Reliability-Based Design and Operation of Metal Rolling Mills using Bayesian Theory and a New Rolling Model*, 2011-15, $364,474; awarded by Manufacturing, Machines and Equipment program (CMMI-1100651). Role: PI.
4. National Science Foundation (NSF): *Simulation of Coil Wedge Effects in Sheet Rolling*, 2008-11, $200,000 + $6,000 REU Supplement; awarded by Manufacturing, Machines and Equipment program (CMMI-0758539), Role: Co-PI.
5. U.S. Air Force Research Laboratory, Chief Scientist Innovation Research Fund / Summer Research Program: *First Order Reliability Framework for Laser Peening of Aircraft Structure*, 2014, $20,714.
6. U.S. Air Force Research Laboratory, Chief Scientist Innovation Research Fund / Summer Research Program: *First Order Reliability Framework for Laser Peening of Aircraft Structure*, 2013, $20,721.
7. U.S. Air Force Research Laboratory, Chief Scientist Innovation Research Fund / Summer Research Program: *First Order Reliability Framework for Laser Peening of Aircraft Structure*, 2012, $20,714.
8. STEM Urban Outreach, Saint Louis University, 2010-12, $1,000. Role: PI.
9. U.S. Air Force Research Laboratory, Summer Research Program: *Experimental Validation of Laser Peening Simulation*, 2011, $17,300.
10. U.S. Air Force Research Laboratory, Summer Research Program: *Uncertain Pre-Stress Analysis in Laser Peening*, 2010, $13,911.
11. Saint Louis University President's Research Grant: *Structural Optimization of Insect-Inspired Micro Air Vehicles*, 2010-11, $24,236. Role: PI.
12. Wright State University Research Challenge: *Commercialization of New Roll Technologies*, 2007-08, $100,000. Role: Co-PI.

RESEARCH PROPOSALS SUBMITED BUT NOT FUNDED

1. National Science Foundation (NSF): *GOALI/Collaborative Research: Integrated Modeling and Experimental Study of Novel Additive Friction Stir Processing of Metallic Materials*, 2018-21, $348,097; pending in Materials Processing and Manufacturing program. Role: PI.
2. National Science Foundation (NSF): *GOALI: Improved Tool-Path Design to Reduce Assembly Costs of High-Speed-Machined Wrought and Additive Metal Parts*, 2018-21, $498,364; pending (recommended) in Manufacturing Machines and Equipment program; Role: PI
3. National Science Foundation (NSF): *GOALI: Improved Tool-Path Design to Reduce Assembly Costs of High-Speed-Machined Wrought and Additive Metal Parts*, 2018-21, $359,790; pending in Manufacturing Machines and Equipment program; Role: PI
4. National Science Foundation (NSF): INCLUDES DDLP: *Building Bridges to Success in the STEM Workplace for People with Autism Spectrum Disorders*, $299,998; declined. Role: Co-PI.
5. National Science Foundation (NSF): *GOALI/Collaborative Research: Integrated Modeling and Experimental Study of Novel Additive Friction Stir Processing of Metallic Materials*, 2017-20, $348,808; declined. Role: PI.
6. National Science Foundation (NSF): *GOALI: Improved Tool-Path Design to Reduce Assembly Costs of High-Speed-Machined Wrought and Additive Metal Parts*, 2017-20, $364,381; declined by Manufacturing, Machines and Equipment program. Role: PI.
7. National Science Foundation (NSF): *CAREER: Integrated Uncertainty-Based Dynamic Modeling of Cold Rolling Mills for Manufacturing Specialty Alloy Sheet*, 2014-19, $400,000; declined by Manufacturing, Machines and Equipment program. Role: PI.
8. Kearn Entrepreneurship Education Network (KEEN): *Instilling Entrepreneurial Mindsets through Innovative Laser Peening Applications*, 2013, $16,600; declined. Role: PI.
9. ALCOA: *Improving Aluminum Manufacturing by Addressing Process Uncertainties*, A Prospectus for Research Collaboration between SLU and ALCOA Technical Center, 2013, $68,000; declined. Role: PI.
10. National Science Foundation (NSF): *CAREER: Integrated Uncertainty-Based Dynamic Modeling of Cold Rolling Mills for Manufacturing Specialty Alloy Sheet*, 2013-18, $581,105; declined by Manufacturing, Machines and Equipment program. Role: PI.
11. National Science Foundation (NSF): *GOALI: Understanding and Incorporating the Effects of Uncertainties in the Design and Optimization of Rolling Mills*, 2010-13, $294,959; declined by Manufacturing, Machines and Equipment program. Role: PI.
12. National Science Foundation (NSF): *GOALI: Investigation of Cognitive, Modeling, and Parametric Uncertainties in the Selection and Optimization of Rolling Mills*, 2010-13, $311,798; declined by Manufacturing, Machines and Equipment program. Role: PI.
13. National Science Foundation (NSF): *Efficient Reliability-Based Optimization of Nonlinear Impulse-Type Processes with Model and Parameter Uncertainties*, 2011-14, $114,999; declined by Engineering Design and Innovation program. Role: Co-PI.
14. National Science Foundation (NSF): *Efficient Reliability-Based Optimization of Nonlinear Impulse-Type Processes with Model and Parameter Uncertainties*, 2010-13, $114,319; declined by Engineering Design and Innovation program. Role: Co-PI.
15. Saint Louis University President's Research Grant: *Structural Optimization of Insect-Inspired Micro Air Vehicles*, 2010-11, $22,400; declined by SLU. Role: PI.

16. Air Force Office of Scientific Research (AFOSR): *Structural Optimization and Analysis of Flexible Wing-Fuselage Systems for Insect-Inspired Micro Air Vehicles*, 2010-12, $356,033; declined by AFOSR. Role: PI.
17. National Science Foundation (NSF): *Investigation of Flatness Actuator Effects in Thin-Strip Cluster-Mills Using a New Mixed Finite-Element Approach*, 2008-11, $295,582; declined by Manufacturing, Machines and Equipment program. Role: Co-PI.
18. National Science Foundation (NSF): *Enhanced Understanding of Flatness Actuator Effects in Thin-Strip Cluster-Mills Using a Novel Mixed Finite-Element Approach*, 2008-11, $308,548; declined by Manufacturing, Machines and Equipment program. Role: Co-PI.

PEER-REVIEWED JOURNAL ARTICLES

1. Hatamleh, M., Mahadevan, J., **Malik, A. S.**, and Qian D., "Variable Damping Profiles using Modal Analysis for Laser Shock Peening Simulation," ASME Journal of Manufacturing Science and Engineering, 2018, Vol. 140, No. 5, pp. 051006-051006, doi: 10.1115/1.4039196

2. F. Zhang, **A. S. Malik.**, "A Roll-Stack Contact Mechanics Model to Predict Strip Profile in Rolling Mills with Asymmetric Continuously Variable Crown Rolls," ASME Journal of Manufacturing Science and Engineering, 2017, Vol. 140, No. 1, pp. 011008-011008-15, doi: 10.1115/1.4037600

3. M. R. Karim, M. Kattoura, S. R. Mannava, V. K. Vasudevan, **A. S. Malik**, and D. Qian., "A computational study on the microstructural evolution in near-surface copper grain boundary structures due to femtosecond laser processing," 2018, Computational Mechanics, 61: 105, doi.org/10.1007/s00466-017-1449-5

4. Hasser, P., **Malik, A.**, Langer, K., Spradlin, T. J., Hatamleh, M. I., "An Efficient Reliability-Based Simulation Method for Optimum Laser Peening Treatment," ASME Journal of Manufacturing Science and Engineering, 2016, Vol. 138, No. 11, pp. 111001-1 to 111001-14. DOI: 10.1115/1.4033604

5. Combes, T., **Malik, A.**, Bramesfeld, G., McQuilling, M., "Efficient Fluid-Structure Interaction Method for Conceptual Design of Flexible, Fixed-Wing Micro-Air-Vehicle Wings," AIAA Journal, 2015, Vol. 53, No. 6, pp. 1442-1454. DOI: 10.2514/1.J053125

6. Bramesfeld, G., **Malik, A.**, "Micro Aerial Vehicles in Confined Spaces: Are Two Wings Better than One?", Journal of Aircraft, 2015, Vol. 52, No. 5, pp. 1575-1585. DOI: 10.2514/1.C033012

7. Vance, S., **Malik, A.**, "Analysis of Factors That May be Essential to the Decision to Fly on Fully Autonomous Passenger Airliners," 2015, Journal of Advanced Transportation, Vol. 49, No. 7, pp. 829-854. DOI: 10.1002/atr.1308

8. Nelson, A., **Malik, A.**, Wendel, J., Zipf, E., "Probabilistic Force Prediction by Cold Sheet Rolling by Bayesian Inference," ASME Journal of Manufacturing Science and Engineering, 2014, Vol. 136, No. 4, pp. 041006-1 to 051009-11. DOI: 10.1115/1.4027434

9. Yang, S., **Malik, A.**, Wu, Y.-J., "Travel Time Reliability Estimation Using the Hasofer Lind-Rackwitz Fiessler Algorithm and Kernel Density Estimation," Transportation Research Record: Journal of the Transportation Research Board, 2014, No. 2442, pp. 85-95. DOI: 143141/2442-10

10. **Malik, A.**, and Hinton, J., "Displacement of Multiple, Coupled Timoshenko Beams in Discontinuous Nonlinear Elastic Contact, with Application to Rolling Mills," ASME Journal of Manufacturing Science and Engineering, 2012, Vol. 134, No. 5, pp. 051009-1 to 051009-10. DOI: 10.1115/1.4007185

11. Hinton, J., **Malik, A.**, Grandhi, R., "An Airy Function to Rapidly Predict Stresses in Wound Metal Strip Having Asymmetric Thickness Profile," International Journal of Mechanical Sciences, 2011, Vol. 53, pp. 827-838. DOI: 10.1016/j.ijmecsci.2011.07.003

12. **Malik, A.**, Grandhi, R., "A Computational Method to Predict Strip Profile in Rolling Mills," Journal of Materials Processing Technology, 2008, Vol. 206, No. 1-3, pp. 263-274. DOI: 10.1016/j.ijmecsci.2011.07.003

13. Guo, R.-M., **Malik, A.**, "Development of a New Crown/Shape Control Model for Cluster Mills," AIST Iron & Steel Technology, 2005, Vol. 2, No. 8, pp. 31-40.

14. **Malik, A.**, Guo, R.-M., "Roll Profile Optimization Using the Linear Programming Method," AISE Steel Technology, 2003, Vol. 80, No. 4, pp. 46-52.

Journal Articles under Review:

1. Zhang, F., Yu, H., Malik, A., "A Generalized First-Order Reliability Method for Implicit and Explicit Functions of Correlated Random Variables," Journal of Reliability Engineering and System Safety, (submitted 6/28/18)

2. Yu, H., Umberto, C., Malik, A., Leonardi, S. "Decoupled Effects of Localized Camber and Spanwise Bending for Flexible Thin Wing," AIAA Journal, (submitted 7/3/18)

PATENTS AND BOOK CONTRIBUTIONS

1. **Malik, A.**, Grandhi, R., "Analytical Method for Use in Optimizing Dimensional Quality in Hot and Cold Rolling Mills," U.S. Patent and Trademark Office, Serial No. 8,176,762 (Regular, Expanded Claims), Approved May, 2012.

2. **Malik, A.**, Grandhi, R., "Analytical Method for Use in Optimizing Dimensional Quality in Hot and Cold Rolling Mills," U.S. Patent and Trademark Office, Serial No. 11/686,381, Approved August, 2010.

3. **Malik, A.**, Grandhi, R., "Parameter Optimization and Uncertainty Analysis in Rolling," in Flat-Rolled Steel Processes: Advanced Technologies, CRC Press, 2009.

4. **Malik, A.**, Grandhi, R., "Recent Developments in Strip Profile Calculation," in Flat-Rolled Steel Processes: Advanced Technologies, CRC Press, 2009.

PEER REVIEWED CONFERENCE PAPERS

1. Sunny, S. , Rostami, S., **Malik, A. S.**, "Effects of Fluid Cavity Modeling when Predicting Compressive Strength of FDM Printed Nylon with Varying Infill Pattern and Density," Proceedings of the 2018 ASME International Manufacturing Science and Engineering Conference, MSEC 2018, June 18-22, 2018, College Station, TX, USA

2. Hatamleh, M. I., Sadeh, S., Farooq, T., **Malik, A. S.**, and Qian, D., "Finite Element Study of Laser Peening on Selective Laser Melted A357 Aluminum Alloy during Tension Test," Proceedings of the 2018 ASME International Manufacturing Science and Engineering Conference, MSEC 2018, June 18-22, 2018, College Station, TX, USA

3. Zhang, F. , Yu, H., **Malik, A. S.**, "High-Fidelity Roll Profile Contact Modeling by Simplified Mixed Finite Element Method," Proceedings of the 2018 ASME International Manufacturing Science and Engineering Conference, MSEC 2018, June 18-22, 2018, College Station, TX, USA

4. Hatamleh, M. I., Mahadevan, J. S., **Malik, A. S.**, and Qian, D., "Variable Damping Profiles for Laser Shock Peening Simulation using Modal Analysis and the SEATD Method," Proceedings of the 2017 ASME International Manufacturing Science and Engineering Conference, MSEC 2017, June 4-8, 2017, Los Angeles, CA, USA

5. Zhang, F., **Malik, A. S.**, "An Efficient Reliability-Based Method for Simulating Strip Crown in CVC Mills," Proceedings of the 2017 AIST Iron & Steel Conference, AISTECH2017, May 8-11, 2017, Nashville, TN, USA

6. Zhang, F., **Malik, A. S.**, "Efficient Prediction of Contact Behavior in a 6-High Rolling Mill with Continuously Variable Crown Intermediate Rolls," Proceedings of the 2017 ASME International Manufacturing Science and Engineering Conference, MSEC 2017, June 4-8, 2017, Los Angeles, CA, USA

7. Zhang, F., **Malik, A.**, "Strip Flatness Mechanism Analysis in Single-Stand Cold Mills," Proceedings of the ASME 2015 Manufacturing Science and Engineering Conference (MSEC2015-9499), June 8-12, 2015, Charlotte, NC.

8. Nelson, A., Zhang, F., **Malik, A.**, Zipf, M, "Sizing Design for 4-High Cold Rolling Mills," Proceedings of the ASME 2014 Manufacturing Science and Engineering Conference (MSEC2014-4137), June 9-13, 2014, Detroit, MI.

9. Yang, S., **Malik, A.**, Wu, Y.-J., "Travel Time Reliability Estimation using Hasofer Lind-Rackwitz Fiessler Algorithm and Kernel Density Estimation," Transportation Research Board 93rd Annual Meeting (TRB paper #14-3545), January 12-16, 2014, Washington, D.C.

10. Wendel, J., Nelson, A., **Malik, A.**, Zipf, M., "Bayesian-Based Probabilistic Force Modeling in Cold Rolling," Proceedings of the ASME 2013 Manufacturing Science and Engineering Conference (MSEC2013-1226), June 10-14, 2013, Madison, WI.

11. Hasser, P., **Malik, A.**, Langer, K., Spradlin, T., "Simulation of Surface Roughness Effects on Residual Stress in Laser Shock Peening," Proceedings of the ASME 2013 Manufacturing Science and Engineering Conference (MSEC2013-1232), June 10-14, 2013, Madison, WI.

12. Combes, T., Zhang, F., Hackett, M., **Malik, A.**, Bramesfeld, G., "Performance Reliability Assessment of a Flexible Wing Micro Air Vehicle using an Efficient Fluid-Structure Interaction Method," 31st AIAA Applied Aerodynamics Conference, June 24-27, 2013, San Diego, CA.

13. Combes, T., **Malik, A.**, Bramesfeld, G., "Efficient Fluid-Structure Interaction Method for Optimization of Micro Air Vehicle Wings," 14th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference (AIAA 2012-5582), Sept. 17-19, 2012, Indianapolis, IN.

14. Combes, T., **Malik, A.**, Bramesfeld, G., "Fluid-Structure Interaction Simulation for the Design of Bio-Inspired Micro Air Vehicle Wings," 30th AIAA Applied Aerodynamics Conference (AIAA 2012-2764), June 25-28, 2012, New Orleans, LA.

15. **Malik, A.**, Wendel, J., Zipf, M., Nelson, A. (2012). A Reliability-Based Approach to Flatness Actuator Effects in 20-High Rolling Mills, American Society of Mechanical Engineers (ASME)Vol. 9, pp. 335-344.

16. **Malik, A.**, Lai, X., Langer, K., "Residual Stress and Wave Reflectivity When Laser Peening Thin Curved Sections," IMECE2011-62444, Proceedings of the 2011 ASME Congress, Nov. 11-17, 2011, Denver, CO.

17. **Malik, A.**, Sanders, J., Grandhi, R., Zipf, M., "Reliability Based Optimal Cluster Mill Pass Scheduling," IMECE2011-62565, Proceedings of the 2011 ASME Congress, Nov. 11-17, 2011, Denver, CO.

18. Hinton, J., **Malik, A.**, Grandhi, R.,"Filtering Winding Effects from Control Systems in Cold Rolling Operations," Proceedings of the AIST Annual Conference, May 2-5, 2011, Indianapolis, IN.

19. Hinton, J., **Malik, A.**, MSEC2010-34162, Proceedings of the 2010 ASME International Manufacturing Science and Engineering Conference, Oct. 12-15, 2010, Erie, PA.

20. **Malik, A.**, Grandhi, R., "Computational Methods for Controlling Strip Profile and Flatness in Rolling Mills,"APCOM'07 in conjunction with EPMESC XI, Kyoto, Japan, December 3-6, 2007.

21. **Malik, A.**, Grandhi, R., Zipf, M., "Optimal Cluster Mill Pass Scheduling with an Accurate and Rapid New Strip Crown Model," NUMIFORM 07- 9th International Conference on Numerical Methods in Industrial Forming Processes (proceedings of the American Institute of Physics), Porto, Portugal, June 17-21, 2007.

22. **Malik, A.**, Grandhi, R., "Validation of an Accurate and Rapid New Model for Strip Crown," AISTech 2007 Iron & Steel Technology Conference, Indianapolis, IN, May 7-10, 2007.

SELECT TECHNICAL PRESENTATIONS & INVITED TALKS

1. Hatamleh, M. I., Mahadevan, J. S., **Malik, A. S.**, and Qian, D., "Identifying Optimum Variable Damping Profiles for Laser Peening Simulation with the SEATD method," 6th International Conference on Laser Peening and Related Phenomena, Pretoria and Skukuza, South Africa, Nov. 6-11, 2016.

2. Hatamleh, M. I., Hasser, P. J., **Malik, A. S.**, Langer, K., Spradlin, T. J., "Effect of Damping Profiles on Laser Peening Simulation Time," 6th International Conference on Laser Peening and Related Phenomena, Pretoria and Skukuza, South Africa, Nov. 6-11, 2016.

3. Hasser, P.J., **Malik, A.S.**, Langer, K., Spradlin, T.J., "A Reliability-Based Framework to Efficiently Optimize Laser Peening Parameters," 5th International Conference on Laser Peening and Related Phenomena, Cincinnati, OH, USA, May 10-15, 2015.

4. **Malik, A.S.**, "Interdisciplinary Engineering Research Using Efficient Uncertainty-Based Prediction," Virginia Tech, Blacksburg, VA, USA, April 28, 2015.

5. Hasser, P.J., **Malik, A.S.**, Langer, K., Spradlin, T.J., "Simulation of Surface Roughness Effects on Residual Stress in Laser Shock Peening," 4th International Conference on Laser Peening and Related Phenomena, Madrid, Spain, May 6-10, 2013.

6. **Malik, A.S.**, "Dealing with Uncertainties in Mathematical Modeling of Manufacturing Processes," U.S.-Korea Workshop on Advanced Manufacturing, Invited Talk by National

Science Foundation, Pohang University of Science and Technology (POSTEC), May 15, 2013, South Korea.

7. Huang, C., **Malik, A.S.**, Langer, K., "Investigation of Fatigue Life Renewal in 6061-T6 Aluminum Alloys Due to Micro Laser Peening," 3rd International Conference on Laser Peening and Related Phenomena, Osaka, Japan, Nov. 11-14, 2011.

8. **Malik, A.**, Nelson, A., Wendel, J., "ALCOA/SLU Research Collaboration Roundtable," ALCOA Technical Center, Pittsburgh, PA, Dec. 9, 2012.

9. **Malik, A.**, Zipf, E., "Research Collaboration between SLU and Olin Brass," Olin Brass Corp., East Alton, IL, Sept. 27, 2013.

INVITED LECTURER FOR INDUSTRY SHORT-COURSES & WORKSHOPS

1. P.E. License Renewal Course Lecturer: "Finite Elements for Stress Analysis," *The Minister Machine Company*, Minster, OH, February 1 – March 28, 2008.
2. 2-Day Short-Course Lecturer: "Stainless Steel Processing," *organized by the Association for Iron & Steel Technology (AIST)*, Columbus, OH, October 23-24, 2006.
3. 5-Day Industry Workshop Lecturer: "2nd Rolling Technology Seminar: Theory & Practice," *organized by Controlling Technology International, Inc.*, Dayton, OH, June 10-15, 2003.
4. 5-Day Industry Workshop Lecturer: "1st Rolling Technology Seminar: Theory & Practice," *organized by Controlling Technology International, Inc.*, Detroit, MI, May 7-11, 2001.

TEACHING ACTIVITIES

Undergraduate Level Courses (number of times taught in parentheses)

1. Introduction to Computational Design and Analysis – MECH 3380 (2)
2. Freshman Engineering I - ESCI 101 (4)
3. Computer Aided Design - ESCI 102 (4)
4. Mechanics of Solids - ESCI 310 (1)
5. Mechanics of Solids Lab - ESCI 311 (1)
6. Introduction to Design - MENG 200 (1)
7. Machine Design - MENG 345 (3)
8. Computer Aided Engineering - AENG/MENG 365 (5)
9. Senior Design I - MENG 450 (3)
10. Senior Design II - MENG 451 (3)

Graduate Level Courses Taught (number of times taught in parentheses)

1. Reliability-Based Design –MECH 6338 (4)
2. Materials Design and Manufacturing – MECH 6333 (2)
3. Computer Aided Design – MECH 6303 (1)

4. Finite Element Analysis I - MENG 534 (3)
5. Finite Element Analysis II - MENG 535 (2)
6. Multidisciplinary Design Optimization - MENG 536 (1)
7. Structural Reliability - MENG 537 (2)
8. Graduate Seminar - MENG 500 (1)

Teaching Performance (Fall 2009 – Spring 2015)

- Average of Student Evaluations (credit hour weighted), Fall '09 – Spring '14 (without Teaching Assistant scores): **4.64 / 5.00 (92.82%)**
- Average of Student Evaluations (credit hour weighted), Fall '09 – Spring '14 (with Teaching Assistant scores): **4.60 / 5.00 (91.92%)**

Teaching Development

- Small Group Instructional Feedback session (SGIF), conducted by Saint Louis University Reinert Center for Transformative Teaching and Learning, Sept. 2014.
- iFaculty Summer Program on Problem Based Learning, Kearn Entrepreneurship Education Network (KEEN), Aug. 13 – 17, 2012
- iFaculty Program, Kearn Entrepreneurship Education Network (KEEN), Feb. 8 - May 2, 2012.
- Annual Conference and Workshop, Kearn Entrepreneurship Education Network (KEEN), Milwaukee School of Engineering, Milwaukee, WI, Oct. 9-10, 2009.
- Entrepreneurship Collaboration Workshop, Kearn Entrepreneurship Education Network (KEEN), Santa Clara University, Santa Clara , CA, April 28-29, 2010.

Curriculum and Learning Resource Development

- Developed & taught a new undergraduate course on 1. Introduction to Computational Design and Analysis (MECH 4V95)
- Developed & taught a new graduate course on Materials Design and Manufacturing (MECH 6333)
- Developed & taught a graduate course (and undergraduate technical elective) on Finite Element Analysis (MENG 534)
- Developed & taught advanced graduate course on Finite Element Analysis II (MENG 535)
- Developed & taught graduate course (and undergraduate technical elective) on Multidisciplinary Design Optimization (MENG 536)
- Developed & taught advanced graduate course on Structural Reliability (MENG 537)
- Developed advanced graduate course on Advanced Mechanics of Solids (MENG 538)
- Developed advanced graduate course on Fracture Mechanics & Plasticity (MENG 539)
- Initiated the widespread use of Finite Element Analysis in undergraduate and graduate courses in Aerospace Engineering and Mechanical Engineering programs; Manage annual procurement, installation, and licensing for Abaqus® FEA software.

SERVICE ACTIVITIES

Professional Service

- Technical Program Chair, ASME 2018 Manufacturing Science and Engineering Conference, College Station, TX.
- Technical Program Co-Chair, ASME 2017 Manufacturing Science and Engineering Conference, Los Angeles, CA.
- Associate Editor, Journal of Manufacturing Processes.
- Symposium Organizer, ASME 2016 Manufacturing Science and Engineering Conference, Blacksburg, VA.
- Member, Organizing Committee, 5th International Conference on Laser Peening and Related Phenomena, May 10-15, 2015, University of Cincinnati, Cincinnati, OH.
- Track/Symposium Organizer, ASME 2015 Manufacturing Science and Engineering Conference, Charlotte, NC.
- Track/Symposium Organizer, ASME 2014 Manufacturing Science and Engineering Conference, Detroit, MI.
- Track/Symposium Organizer, ASME 2013 Manufacturing Science and Engineering Conference, Madison, WI.
- Symposium Organizer, ASME 2012 Manufacturing Science and Engineering Conference, Notre Dame, IN.
- Symposium Co-Organizer, ASME 2010 Manufacturing Science and Engineering Conference, Erie, PA.
- Faculty (Student Section) Advisor, American Society of Mechanical Engineers (ASME), Aug. 2009 – May 2013.
- Workshop Participant, U.S.-Korea Workshop on Advanced Manufacturing, Invited by National Science Foundation, May 12-17, 2013, South Korea.
- National Science Foundation Panel Reviewer, SBIR/STTR proposals for CMMI Division, Sept. 2013.
- Proposal Panel Reviewer, National Science Foundation (CMMI), 2009-13.
- Reviewer, Journal of Manufacturing Science and Engineering.
- Reviewer, Journal of Manufacturing Processes.
- Reviewer, Journal of Manufacturing Science and Technology.
- Reviewer, Journal of the Institution of Mechanical Engineers.
- Reviewer, Journal of Machining Science and Technology.
- Reviewer, Journal of Mechanical Science and Technology.
- Reviewer, Journal of Structural and Multidisciplinary Optimization.
- Organizer & Host, ASME District C Student Professional Development Conf., 2011.

University Service

- Chair, ad hoc Mid Probationary Review Committee, UTD, Fall 2016-18
- Member, University Conflict of Interest in Research Committee, SLU, Aug. 2013 – May 2015.
- Proposal Reviewer, SLU President's Research Fund, 2011-12.
- Proposal Reviewer, SLU Beaumont Fund, 2012.
- Proposal Reviewer, Sustainability Innovation Fund, 2012.
- Marshall, SLU Commencements and Convocation, 2010-11.

- Interviewer, SLU Presidential Scholarships, 2010.
- Interviewer, SLU Martin Luther King Scholarships, 2010.

College Service

- Member, Institutional Affairs Committee, SLU, Aug. 2014 – May 2015.
- Member, Graduate Research Affairs Committee, SLU, Aug. 2010 – May 2013
- Member, Ad Hoc Graduate Student and Faculty Awards Committee, Fall Semester, 2013.
- Faculty (Student Section) Advisor, American Society of Mechanical Engineers (ASME), SLU, Aug. 2009 – May 2013.

Department Service

- ABET Accreditation Coordinator and Committee Chair, Mechanical Engineering BS Program, UTD, 2016-present.
- Chair, Manufacturing Design and Innovation Focus Area in Mechanical Engineering Program, UTD, 2016-present.
- Member, Ad Hoc Committee on Faculty Workload, SLU, 2014-15.
- Member, Biomedical Engineering Faculty Search Committee, SLU, Spring Semester, 2013.
- Member, Aerospace and Mechanical Engineering Faculty Search Committee, SLU, Fall Semester, 2013.
- Member, Aerospace and Mechanical Engineering Chair Search Committee, SLU, Fall Semester, 2013.
- Member, Aerospace and Mechanical Engineering Program Committee, SLU, 2012.
- Chair, Aerospace and Mechanical Engineering Lab Committee, SLU, 2010.
- Member, Civil Engineering Faculty Search Committee, Spring Semester, SLU, 2010.
- Faculty Advisor, Parks Formula SAE Racing Team, SLU, Aug. 2009 – Dec. 2013.
- Chair, Manufacturing Design and Innovation Focus Area, UTD, Aug. 2015 – Present
- ABET Coordinator for Mechanical Engineering, UTD, Sept. 2015 - Present

Community Service

- Organizer, Engineering Brighter Futures for Autism (collaboration between Autism Speaks, Microsoft Store, Autism Treatment Center of Dallas, SLU), 2016-17. Video Productions: https://youtu.be/nDXNNH91IjU and https://youtu.be/XF9auIQN8Wk
- Organizer and Faculty Advisor, Lewis & Clark Aviation, Space, and Engineering Summer Camps, 2012-14.
- Faculty Advisor, Teen Connection to Social Skills (joint with SLU Occupational Therapy Dept., 2013-14.
- Faculty Advisor, STEM Urban Outreach, 2010-14.
- Judge, Billiken Beams High School Bridge Building Competition, 2011-14.

HONORS AND AWARDS

- National Science Foundation Faculty Early Career Development Award (NSF CAREER), Jan. 2015

- Saint Louis University Junior Faculty Excellence in Research Award, 2013
- Best Organizer of Symposium and Session, ASME Manufacturing Science and Engineering Conference, 2013 (MSEC2013); 2015 (MSEC2015).
- NSF Fellowship, Uncertainty in Machining Workshop, Arlington, VA, Feb. 4-6, 2010.
- NSF Fellowship, Principles of and Recent Advances in Laser Micro/Nano Manufacturing Processes Workshop, Northwestern University, Evanston, IL, June 1-4, 2010.
- Outstanding Graduate Student Excellence Award, Ph.D. in Engineering Program, 2007.
- Best Presentation Award, 30th AIAA Dayton-Cincinnati Aerospace Sciences Symposium (DCASS), Dayton, OH, March, 2005.

SYNERGISTIC ACTIVITIES

Lewis & Clark Aviation, Space, and Engineering Middle School Summer Camps
Between 2011 and 2013, together with the Lewis & Clark Educational Institute of St. Louis, Dr. Malik created and managed seven 15-day summer camps for middle-school students in St. Louis. More than 100 students, including many from underrepresented demographics, explored exciting engineering disciplines by building mini rolling mills, marshmallow launchers, telescopes, model rockets, airplanes, and fluid channeling devices.

Teen Connection to Social Skills
In collaboration with Saint Louis University's Occupational Therapy Dept., Dr. Malik co-created a unique series of workshops aimed at improving the success rates of teens having High-Functioning Autism in pursuing engineering careers. The workshops, "Teen Connection to Social Skills," are conducted by Malik's graduate and undergraduate engineering students and SLU's Occupational Therapy students.

iFaculty Initiative (supported by the Kearn Entrepreneurship Education Network)
Dr. Malik has been actively involved with the Innovation Faculty (iFaculty) program at Saint Louis University. The iFaculty program is a major initiative sponsored by the Kearn Entrepreneurship Education Network, which promotes integration of creative entrepreneurial mindsets into engineering education.

Manufacturing Pass Schedule Optimization Program
At the request of I2S Tenova, LLC, Dr. Malik created a computer program that performs optimization of set-up parameters for stainless rolling mills using advanced optimization concepts, non-linear solution techniques, and adaptive learning of yield strengths of metals during rolling. A similar program was later created for Mid America Stainless, LLC.

Short Courses on Strip Rolling Fundamentals
Dr. Malik was invited by the Association of Iron and Steel Engineers (AIST) in 2006 to teach a short course on stainless steel processing to more than thirty industry professionals. The course integrated theoretical concepts in the structural deflection of rolling mills with practical insights brought by Malik's industry experience. In addition, after co-founding CTI, Inc., Malik created an innovative Manufacturing Technology Seminar that integrated fundamental rolling theory

with computerized mill simulations. The 5-day course provided industry professionals an opportunity to conduct "what-if" process control strategies in hot and cold rolling.

Professional Engineers License Renewal Course: Finite Elements for Stress Analysis
Dr. Malik served as co-instructor to teach an 8-week Professional Engineers license renewal course at the Minster Machine Company. The course was designed to provide practicing engineers a thorough understanding on how to implement the finite element method to solve practical structural analysis problems involving static and dynamic loading of large stamping machines.

MEMBERSHIP IN PROFESSIONAL SOCIETIES

- Member and former Faculty Advisor, American Society of Mechanical Engineers (ASME)
- Senior Member, American Institute of Aeronautics and Astronautics (AIAA)
- Member, Association for Iron & Steel Technology (AIST)
- Member, Tau Beta Pi Engineering Honor Society
- Advisor, Tau Beta Epsilon Honor Society
- Member, Sigma Xi Scientific Research Society

FELLOWSHIPS & SCHOLARSHIPS

- U.S. Air Force Research Laboratory (AFRL) Summer Research Program Faculty Fellowship, Wright-Patterson AFB, Dayton, Ohio, 2010-15
- Wright State University College of Engineering Graduate Assistantship, 2006-07
- Dayton Area Graduate Studies Institute (DAGSI) Research Assistantship, 2004-06
- Dayton Area Graduate Studies Institute (DAGSI) Industrial Scholarship, 2002-04
- Wright State University Undergraduate Academic Scholarship

COMMUNITY OUTREACH

- Organizer (2016-18), *Engineering Brighter Futures for Autism*, Dallas, TX. Video Production: https://youtu.be/nDXNNH91IjU and https://youtu.be/XF9auIQN8Wk
- Organizer (2011-2013), *Aviation, Space, and Engineering* middle school summer camps held in conjunction with the Lewis & Clark Educational Institute, St. Louis, MO.
- Faculty Advisor (2010-present), *STEM Urban Outreach;* a student group performing science and engineering demonstrations to inner-city middle and high schools, St. Louis, MO.
- Faculty Advisor (2013-present), *Teen Connection to Social Skills;* a combined engineering and occupational therapy student group conducting workshops to help develop social skills for high school students with high-functioning autism, St. Louis, MO.
- Over 15 years of continuous, dedicated community service to Building Bridges, Inc., a non-profit affiliation of Ohio's Montgomery County Children's Services that strives to overcome juvenile delinquency:
  - Academic mentoring for inner-city and underprivileged youths
  - 5k youth/mentor runs and 15k youth/mentor bicycle races

- Mentoring for troubled teens; visits to Veterans Administration hospitals, group socialization, airplane rides, annual children's parties, Adopt-A-Kid Christmas programs