

FACULTY VITA

Date: March 18, 2024

Name: Matthew C. Frank

Department: Industrial and Manufacturing Systems Engineering

Current Rank: Professor

I. BACKGROUND, PROFESSIONAL EXPERIENCE AND RECOGNITIONS

A. Education

Ph.D., Industrial Engineering, The Pennsylvania State University, May 2003

M.S., Mechanical Engineering, The Pennsylvania State University, December 1998

B.S., Mechanical Engineering, The Pennsylvania State University, December 1996

B. Academic Appointments

Iowa State University

Associate Chair and Director of Undergraduate Education, 2023-Present

John B. Slater Professor of Sustainable Design and Manufacturing, 2020-Present

Professor, Department of IMSE, 2019-2020

Associate Professor, Department of IMSE, 2009-2019

Assistant Professor, Department of IMSE, 2003-2009

C. Other Professional Employment

Engineering Consultant, Deere and Company, August 2019-August 2020

Research Assistant, Pennsylvania State University, Jan 2000- June 2003

Intern, General Nutrition Products, Greenville, SC, July 1999-Dec 1999

Teaching Assistant, Pennsylvania State University, Aug 1998-Dec 1998

NSF Graduate Research Trainee, Pennsylvania State University, 1997-2000

Manufacturing Engineer, Overhead Door Corporation, Lewistown, PA, 1996-1997

D. Honors and Awards

Regents Award for Faculty Excellence, Iowa State University, 2023

Don Grant award for Excellence in Teaching, Industrial and Manufacturing Systems Engineering, ISU, 2023

John B. Slater Professorship in Sustainable Design and Manufacturing, November 2019

Don Grant award for Excellence in Teaching, Industrial and Manufacturing Systems Engineering, ISU, 2019

Outstanding Service Award: Institute of Industrial and Systems Engineers, Manufacturing and Design Division, 2017

Best Paper Award: Institute of Industrial and Systems Engineers, IISERC Conference Paper, Manufacturing & Design Division, 2017

Outstanding Regional Faculty Advisor, North Central Region: Institute of Industrial Engineers, 2015

Don Grant award for Excellence in Teaching, Industrial and Manufacturing Systems Engineering, ISU, 2014

Emerald Literati Network 2010 Awards for Excellence, Highly Commended Award for 2009 in the Rapid Prototyping Journal, “Automated Fixture Design for a Rapid Machining Process”, W. Boonsuk and M.C. Frank

SME Branimir F. von Turkovich Outstanding Young Manufacturing Engineer Award, Society of Manufacturing Engineers, 2006

Cited for Exceptional Support, 2005 and 2007 Student Scholars and Leaders Recognition Ceremony

ISU Engineers Week “Outstanding Professor of the Year”, 2005

Best Paper Award: Institute of Industrial Engineers, IERC Conference Paper, Manufacturing & Design Division, May 2004

II. SCHOLARSHIP AND RESEARCH/CREATIVE ACTIVITIES

A. Scholarship

Denotes any publication derived from the candidate's thesis/dissertation.

** Denotes student co-author.*

1. Articles in Peer-Reviewed Journals – In Print or Accepted

Eric Weflen, Jakob D. Hamilton, Samantha Sorondo, Ola L. A. Harrysson, **Matthew C. Frank** & Iris V. Rivero (2022): “Evaluating interlayer gaps in friction stir spot welds for rapid tooling applications”, IISE Transactions, DOI:10.1080/24725854.2022.209118, 2022

Weflen, E. ⁺ and **Frank, M.C.**, “Hybrid additive and subtractive manufacturing of multi-material objects”, Rapid Prototyping Journal, 20(10), pp. 1860-1871
<https://doi.org/10.1108/RPJ-06-2020-0142>, 2021

Chen, N. and **Frank, M.C.**, “Process Planning for Hybrid Additive and Subtractive Manufacturing to Integrate Machining and Directed Energy Deposition”, Procedia Manufacturing, 34, 205-213 2019

Abdel-All, E.S. †, **Frank, M.C.** and Stone, R.T., “Design for Manufacturability-Based Feedback to Mitigate Design Fixation”, Journal of Mechanical Design, Transactions of the ASME, 140 (9):10.1115/1.404024, 2018

Chen, N. †, Barnawal, P. †, and **Frank, M.C.**, “Automated Post Machining Process Planning for a New Hybrid Manufacturing Method of Additive Manufacturing and Rapid Machining”, Rapid Prototyping Journal, Vol. 24, No. 7, pp. 1077-1090, 2018

Abdel-All, E.S. †, **Frank M.C.**, and Stone, R.T., “A Study of Design Fixation Related to Additive Manufacturing” Journal of Mechanical Design, Transactions of the ASME, 140 (4), 041702, 2018

Eldakroury, M.A. †, Chen, N. †, and **Frank, M.C.**, “A New Method for Locating Candidate Substrates for Multi Axis Hybrid Manufacturing Systems”, Rapid Prototyping Journal, Vol. 24, No. 2, pp 237-248, 2018

Hoefer M.J. † and **Frank, M.C.**, “Automated Manufacturing Process Selection During Conceptual Design” Journal of Mechanical Design, Transactions of the ASME, 140 (3), 031701, 2018

Wang, D. †, Peters, F.E., and **Frank, M.C.**, “A Semiautomatic, Cleaning Room Grinding Method for the Metal casting Industry”, Journal of Manufacturing Science and Engineering, Transactions of the ASME, Vol. 139, pp 121017-1:121017-8, 2017

Barnawal, P. †, Dorneich, M.C., **Frank, M.C.**, and Peters, F.E., “Evaluation of Design Feedback Modality in Design for Manufacturability”, Technical Brief, Journal of Mechanical Design, Transactions of the ASME, Vol. 139, No 9, 094503, 2017

Hou, G. †, and **Frank, M.C.**, “Computing the Global Visibility Map Using Slice Geometry for Setup Planning”, Journal of Manufacturing Science and Engineering, Transactions of the ASME, Vol. 139, No. 8, 081006, 2017

Zhu, S. †, Magnussen, C.J. †, Judd, E†, **Frank M.C.**, and Peters, F.E., “Automated Composite Fabric Layup for Wind Turbine Blades”, Journal of Manufacturing Science and Engineering, Vol 139, No. 6, 061001, 2017

Abdel-All, E. †, **Frank M.C.**, and I. Rivero, “Rapid Tooling Using Friction Stir Welding and Machining”, Rapid Prototyping Journal, Vol 23, issue 1, pp. 81-95, 2017

Lei, S. †, **Frank, M.C.**, Anderson, D.D., and Brown, T.D., “A Method to Represent Heterogeneous Materials for Rapid Prototyping – The Matryoshka Approach”, Rapid Prototyping Journal, Vol. 20, Issue 5, 2014

Luo, X. †, Li, Y. †, and **Frank, M.C.**, “A Finishing Cutter Selection Algorithm for Additive/Subtractive Rapid Pattern Manufacturing”, International Journal of Advanced Manufacturing Technology, Vol 69, pp. 2041-2053, 2013

Li, Y. † and **Frank, M.C.**, “Computing Axes of Rotation for Setup Planning Using Visibility of Polyhedral CAD Models”, Journal of Manufacturing Science and Engineering, Transactions of the ASME, Vol. 134, pp 041005(1-10), 2012

Anderson DD, Thomas TP, **Frank M.C.**, Marsh JL, Brown TD. On the Horizon from the ORS: “Assessing and minimizing the adverse mechanical consequences of articular fractures to decrease the risk for posttraumatic osteoarthritis”. Journal of the American Academy of Orthopaedic Surgeons, 19(10), pp. 644-646, 2011

Thomas, T.P., Anderson, D.D., Willis, A.R., Liu, P., **Frank, M.C.**, Marsh, J.L., and Brown, T.D., “A Computational/Experimental Platform for Investigating Three-Dimensional Puzzle Solving of Comminuted Articular Fractures”, Computer Methods in Biomechanics and Biomedical Engineering, Vol. 14, No. 3, pp. 263-270, 2011

Petrzelka, J.E. †, **Frank, M.C.**, “Advanced Process Planning for Subtractive Rapid Prototyping”, Rapid Prototyping Journal, Vol. 16, No. 3, pp. 216-224, 2010

Makhe, A. † and **Frank, M.C.**, “Polygon Subdivision for Pocket Machining Process Planning”, Computers and Industrial Engineering, Vol. 48, No. 4, pp. 709-716, 2010

Yang, Z., Wysk, R.A., Joshi, S.B. † **Frank, M.C.**, Petrzelka, J.E. †, “Conventional Machining Methods for Rapid Prototyping and Direct Manufacturing”, International Journal of Rapid Manufacturing, Vol. 1, No. 1, pp. 41-64, 2009

Luo, X. † and **Frank, M.C.**, “A Layer Thickness Algorithm for Additive/Subtractive Rapid Manufacturing”, Rapid Prototyping Journal Vol.16, No. 2, pp. 100-115, 2009

Boonsuk, W. † and **Frank, M.C.**, “Automated Fixturing for a Rapid Machining System”, Rapid Prototyping Journal Vol. 15, No. 2, pp. 111-125, 2009

Li, Y. † and **Frank, M.C.**, “Computing Non-Visibility of Convex Polygonal Facets on the Surface of a Polyhedral CAD Model”, Computer Aided Design, Vol. 39, No. 9, pp. 732-744, 2007

Li, Y. † and **Frank, M.C.**, “Machinability Analysis for 3-axis Flat End Milling”, Journal of Manufacturing Science and Engineering, Transactions of the ASME, Vol. 128, No. 2, pp. 454-464, 2006

Frank, M.C. #, Wysk, R.A., and Joshi, S.B., “Determining Setup Orientations from the Visibility of Slice Geometry for Rapid CNC Machining”, Journal of Manufacturing Science and Engineering, Transactions of the ASME, Vol. 128, No. 1, pp. 228-238, 2006

Frank, M.C. #, Wysk, R.A., and Joshi, S.B., “Rapid Planning for CNC Machining – A New Approach to Rapid Prototyping”, Journal of Manufacturing Systems, SME, Volume 23, No. 3, pp. 242-255, 2004

Frank, M.C. #, Joshi, S.B., and Wysk, R.A., “Rapid Prototyping as an Integrated Product/Process Development Tool: An overview of Issues and Economics”, Journal of Chinese Institute of Industrial Engineers, Vol. 20, No. 3, 2003

2. Articles in Peer-Reviewed Journals – In Review

3. Peer-Reviewed Conference Proceedings, Bulletins, or Reports – In Print/Accepted

Chen, N. and **Frank, M.C.**, “Process planning for hybrid additive and subtractive manufacturing to integrate machining and directed energy deposition”: Procedia Manufacturing, Proceedings of the 47th SME North American Manufacturing Research Conference, Penn State Behrend, Erie, Pennsylvania, 2019

Chay, J., Jackman, J.J., **Frank, M.C.**, Peters, F.E., “A New Metric for Evaluating Machinability of a Design”, Proceedings of the Industrial and Systems Engineering Research Conference, Pittsburgh, PA, 2017

Hoefer, M. †, Chen, N., **Frank, M.C.** “Automated Manufacturability Analysis for Conceptual Design in New Product Development” (*Best Paper: Manufacturing and Design Division*), Proceedings of the Industrial and Systems Engineering Research Conference, Pittsburgh, PA, 2017

Hoefer, M. †, **Frank, M.C.**, Dorneich, M.C., “Geometric Analysis to Automate Design for Supply Chain”, Proceedings of the Industrial and Systems Engineering Research Conference, Pittsburgh, PA, 2017

P Barnawal, MC Dorneich, F Peters, **Frank, M.C.** Design and Evaluation of Designer Feedback System in Design for Manufacturability, Proceedings of the Human Factors and Ergonomics Society Annual Meeting, Vol 59, Iss1, pp 1142-1146, 2015

Zhu, S. [†], **Frank, M.C.**, and F. Peters, “Automated Composite Fabric Layup for Wind Turbine Blades,” Composites and Advanced Materials Expo, Orlando, FL, 2014

Mayer, R., Moeller, B., Kaliwata, V., Zweber, B., Stone, R.T., and **Frank, M.C.**, “Educating Engineering Undergraduates: Effects of Scaffolding in a Problem-Based Learning Environment”, Proc. of the Human Factors and Ergonomics Society Annual Meeting, Vol. 56, No. 1, pp. 2507-2511, SAGE Publication, Boston, MA, October 2012

Petrzelka, J.E. [†] and **Frank, M.C.** “Emergent Structure Detection for Multi-axis Machining,” Proceedings of the 2010 ASME International Manufacturing Science and Engineering Conference, Erie, PA, 2010

Frank, M.C., Hunt, C.V., Anderson, D.D., McKinley, T.O., and Brown, T.D., Extended Abstract: “Maintenance of surface porosity when using subtractive rapid prototyping for bone replacement”, 55th Annual Meeting of the Orthopaedic Research Society (70%), Las Vegas, NV, February 22-25, 2009

Frank, M.C., Hunt, C.V., Anderson, D.D., McKinley, T.O., and Brown, T.D., “Rapid Manufacturing in Biomedical Materials: Using Subtractive Rapid Prototyping for Bone Replacement”, Proceedings of the Solid Freeform Fabrication Symposium (85%), Austin TX August, 2008

Anderson, D.D., **Frank, M.C.**, McKinley, T.O., and Brown, T.D., Extended Abstract: “Fragment Substitutes for Anatomically-Interfaced Segmental Bone Defect Repair” 54th Annual Meeting of the Orthopaedic Research Society (70%), San Francisco, CA, March 2-5, 2008

Li, Y. [†] and **Frank, M.C.**, “Determining the Geometric Machinability of Flat End Mills for 3-axis CNC Machining”, Proceedings of the 33rd Annual North American Manufacturing Research Conference (67%), New York, NY, 2005

Boonsuk, W. [†] and **Frank, M.C.**, “The Use of Sacrificial Support Structures in a Rapid Machining Process”, Proceedings of the Industrial Engineering Research Conference (85%), Atlanta, GA, 2005

McBrearty, K., Wysk, R.A., and **Frank, M.C.**, “Economics of Sacrificial Fixturing for CNC Machining and Rapid Manufacturing”, Proceedings of the ASME Design Engineering Technical Conference and Computers and Information in Engineering Conferences (75%), Salt Lake City, UT, 2004

Frank M.C. [#], Wysk, R.A., and Joshi, S.B., “Visibility from a Slice File for Rapid CNC Machining” (*Best Paper: Manufacturing and Design Division*), Proceedings of the Industrial Engineering Research Conference (85%), Houston, TX, 2004

Frank, M.C. [#], Wysk, R.A., and Joshi, S.B., “Rapid Prototyping Using Machining”, Proceedings of the ASME Design Engineering Technical Conference and Computers and Information in Engineering Conferences (75%), Chicago, IL, 2003

Frank, M.C. [#], Joshi, S.B., and Wysk, R.A., “CNC-RP: A Technique for Using CNC Machining as a Rapid Prototyping Tool in Product/Process Development”, Proceedings of the Industrial Engineering Research Conference (85%), Orlando, FL, 2002

Frank, M.C. [#], Petrick, I.J., Lehtihet, A.E., and Voigt, R.C., “Impact of Tooling Design and Set-up on the Variability of Production P/M Components”, Proceedings of the World Congress on Powder Metallurgy and Particulate Materials (85%), Orlando, FL, 2002

McAllister, C., Altuntas, B., **Frank, M.C.**, and Potoradi, J., “Implementation of Response Surface Methodology using Variance Reduction Techniques in Semiconductor Manufacturing”, Proceedings of the Winter Simulation Conference (75%), Washington D.C., 2001

4. Other conference proceedings, posters, and presentations

Weflen, E.D., Peters, F.E., and **Frank, M.C.**, “Thermally Switchable Build Table by Mechanical Interlocking for Additive Manufacturing”, Proceedings of the Solid Freeform Fabrication Symposium, pp. 1375-1381, August 2022

Weflen, E.D., Peters, F.E., and **Frank, M.C.**, “Hybrid Additive and Subtractive Manufacturing of Direct-Heated Tooling”, Proceedings of the Solid Freeform Fabrication Symposium, pp. 1792-1799, August 2022

Weflen, E.D., Ginther, M.C., Eldakoury, M.A., and **Frank, M.C.**, “Mechanical interface for iterative hybrid additive and subtractive manufacturing”, Proceedings of the Solid Freeform Fabrication Symposium, Virtual, pp. 1672-1682, August 2021

Weflen, E.D., Black, M.A., **Frank, M.C.**, and Peters, F.E., “Wire arc additive manufacturing of low carbon steel casting applications”, Proceedings of the Solid Freeform Fabrication Symposium, Virtual, pp. 170-177, August 2021

Frank, M.C., Croghan, J., Larson, S., Beguhn, L., “Integration challenges with additive/subtractive in-envelope hybrid manufacturing”, Solid Freeform Fabrication 2019: Proceedings of the 30th Annual International Solid Freeform Fabrication Symposium – An Additive Manufacturing Conference, pp. 294-300, Austin, TX Aug 12-14, 2019

Frank, M. C., Harrysson, O.L.A., Wysk, R.A., Chen, N. [†], Srinivasan, H., Hou, G. [†], Keough, C., “Direct Additive Subtractive Hybrid Manufacturing (DASH) – An Out of Envelope Method”, Proceedings of the Solid Freeform Fabrication Symposium, Austin, TX, 2017

Chen, N. †, **Frank, M. C.**, “A Method for Metal AM Support Structure Design to Facilitate Removal”, Proceedings of the Solid Freeform Fabrication Symposium, Austin, TX, 2017

Frank, M. C., Harrysson, O.L.A., Wysk, R.A., Chen, N. †, Srinivasan, H., Hou, G. †, Keough, C., “A method for integrating additive and subtractive operations for metal parts – Direct Additive/Subtractive Hybrid Manufacturing (DASH), Material Science and Technology (MS&T), October 8-12, Pittsburgh, PA, 2017

Ramesh, S., Eldakoury, M. †, Rivero, I.V., and **Frank, M.C.**, “Additive Fabrication of Polymer –Ceramic Composite for Bone Tissue Engineering, Proceedings of the Solid Freeform Fabrication Symposium, Austin, TX, 2017

Chen, N. †, **M.C Frank** and F. Peters, “A hybrid additive/subtractive approach to rapid pattern tooling using reverse engineering for near net shape legacy metal castings”, The Solid Freeform Fabrication Symposium, Austin, TX, 2016

Barnawal, P., M. Dorneich, F. Peters, and **Frank, M.C.**, “Evaluation of Designer Feedback Systems in Design for Manufacturability,” Steel Founders’ Society of America Technical and Operating Conference, Chicago, IL, December 2014

W. Johannis, L. Schlangen, F. Peters, **M. Frank** and J. Jackman, “Avoiding Waves in Longitudinal Blade Elements via Pre-Shearing of Unidirectional Fabrics,” International Conference on Future Technologies for Wind Energy, Laramie, WY, October 2013

F. Peters, F. Meng†, **M. Frank**, “Measurement, Analysis and Process Planning for the Layup of Fabrics in Wind Turbine Blades,” Blade Manufacturing Workshop, Dusseldorf, Germany, November 2012

Meng, F. †, Frank, M.C., and Peters, F.E., “Measurement, Analysis and Process Planning for the Layup of Fabrics in Wind Turbine Blades,” AWEA WindPower, Atlanta, GA, 2012

Frank, M.C. and Peters, F.E., “Rapid Pattern Manufacturing: An Additive/Subtractive System for Large Functional Tooling (poster),” Solid Freeform Fabrication Symposium, Austin, TX, 2012

Meng, F. †, **Frank, M.C.**, and Peters, F.E., “Measurement, Analysis and Process Planning for the Layup of Fabrics in Wind Turbine Blades,” AWEA WindPower, Atlanta, GA, 2012

Frank, M.C., Joshi, A.J. †, Lei, S. †, Anderson, D.D., Tochigi, Y., and Brown, T.D., “Creating Implants from Allograft Bone using Subtractive Rapid Prototyping”, Proceedings of the Solid Freeform Fabrication Symposium, Austin, TX, 2012

Meng, F. [†], **Frank, M.C.**, and Peters, F.E., Abstract (poster) - “Measurement of in-plane shear and out-of-plane waviness on the draping of unidirectional (UD) fabrics for wind blades”, AWEA Windpower, Anaheim CA, 2011

Meng, F. [†], **Frank, M.C.**, and Peters, F.E., Abstract - “Measurement of in-plane shear and out-of-plane waviness on the draping of unidirectional (UD) fabrics for wind blades” (poster), AWEA Windpower, Anaheim CA, 2011

Jackman, J.K., **Frank, M.C.**, Peters, F.E., and Nolet, S., Abstract – “Sampling Intervals for Turbine Blade Measurements” (poster), AWEA Windpower, Anaheim CA, 2011

Jackman, J.K., **Frank, M.C.**, Peters, F.E., and Nolet, S., Abstract (poster) – “Sampling Intervals for Turbine Blade Measurements”, AWEA Windpower, Anaheim CA, 2011

Frank, M.C., Joshi, A.J. [†], Anderson, D.D., Thomas, T.P., Rudert, J.M., Tochigi, Y., Lawrence, J.L., Brown, T.D., Patient-Specific Bone Implants using Subtractive Rapid Prototyping Proceedings of the Solid Freeform Fabrication Symposium, Austin, TX, 2010

Frank, M.C., Peters, F.E., Karthikeyan, R. [†], Additive/Subtractive Rapid Pattern Manufacturing for Casting Patterns and Injection Mold Tooling, Proceedings of the Solid Freeform Fabrication Symposium, pp 242-255, Austin, TX, 2010

Petrzelka, J.E. [†], **Frank, M.C.**, “Advanced Process Planning for Subtractive Rapid Prototyping”, Proceedings of the Solid Freeform Fabrication Symposium, Austin, TX, 2009

Frank, M.C., Peters, F.E., Luo, X. [†], Meng, F. [†], and Petrzelka, J.E. [†], “A Hybrid Rapid Pattern Manufacturing System for Sand Castings”, Proceedings of the Solid Freeform Fabrication Symposium, Austin, TX, 2009

Li, Y. [†] and **Frank, M.C.** “A Multi-Layer Visibility Map for Manufacturability Analysis”, Industrial Engineering Research Conference, Vancouver, B.C., 2008

Boonsuk, W. [†], **Frank, M.C.**, “An Algorithm for Registering Medical Images for Biomedical Manufacturing”, Industrial Engineering Research Conference, Vancouver, B.C., 2008

Luo, X. [†] and **Frank, M.C.**, “A Tool Selection Algorithm for Additive/Subtractive Rapid Manufacturing”, Industrial Engineering Research Conference, Vancouver, B.C., 2008

Frank, M.C., Peters, F.E., Luo, X. [†], and Oberbroeckling, S. [†], “Rapid Patternmaking”, Proceedings of the Steel Founders’ Society of America – Technical and Operating Conference, Chicago, 2008

Frank, M.C. #, “Implementing Rapid Prototyping Using CNC Machining (CNC-RP) Through a CAD/CAM Interface”, Proceedings of the Solid Freeform Fabrication Symposium, Austin, TX, 2007

Walker, J., **Frank, M.C.**, and Peters, F.E., “Innovative Control of Metal Pouring”, Proceedings of the Steel Founders’ Society of America – Technical and Operating Conference, Austin, TX, 2007

Wang, D. †, **Frank, M.C.**, and Peters, F.E., “An automated grinding system with flexibility to accommodate steel castings”, Proceedings of the Steel Founders’ Society of America – Technical and Operating Conference, Chicago, IL, 2007

Peters, F.E., Saveraid, G., and **Frank, M.C.**, “Instrumentation of Heat Treatment”, Proceedings of the Steel Founders’ Society of America – Technical and Operating Conference, Chicago, IL, 2006

Harwood, B., Peters, F.E., **Frank, M.C.**, “Improving Productivity and Energy Efficiency in Heat Treatment” (Abstract), TMS Conference (Material Science), Cincinnati, OH, 2006

Frank, M.C. # “Analysis of Material Conditions During a Rapid Machining Process”, Industrial Engineering Research Conference, Orlando, FL, 2006

Harwood, B., Peters, F.E., and **Frank M.C.**, “Heat treatment: taking control of productivity and energy usage”, Proceedings of the Steel Founders’ Society of America – Technical and Operating Conference, Chicago, IL, 2005

5. Books and Book Chapters

Frank, M.C. #, Chapter: “Subtractive Rapid Prototyping – Creating a Completely Automated Process for Rapid Machining”, in Rapid Prototyping: Theory and Practice, A. Kamrani and E. Nasr, Editors, Springer 2006

Frank, M.C., Chapter: “Computer Circuit Board Recycling”, Innovations and Materials for Green Engineering, Lakhtakia, A., and Bakis, C. E., Editors, Pennsylvania State University, University Park, PA, 1997

6. Formally Invited Lectures and Presentations

Additive Manufacturing Symposium, Center for Additive Manufacturing and Logistics at North Carolina State University, “Hybrid Manufacturing – Combining Additive and Subtractive Technologies”, April 11th -13th, 2018

University of Iowa, Department of Industrial Engineering, “Rapid Manufacturing and Prototyping”, Iowa City, IA, April 19th 2012

University of Massachusetts at Lowell – Wind Energy Research Workshop; “Wind Energy Research at Iowa State University”, September 22nd, 2011

Air Force Institute of Technology/Air Force Research Laboratory, Symposium on Rapid Product Development, “The Rapid Manufacturing and Prototyping Laboratory”, Wright Patterson Air Force Base, Dayton, OH, November 12th 2010

Steel Founders' Society of America Member Workshop, with Frank Peters, IMSE, “Rapid Patternmaking”, Chicago, IL, December 2006

Society of Manufacturing Engineers, Rapid Prototyping and Manufacturing Conference (RAPID 2006), “Rapid Prototyping Using CNC Machining”, St. Charles, IL, May 24, 2006

University of Iowa, Department of Biomedical Engineering, “Rapid Prototyping using CNC machining for Biomedical Applications”, Iowa City, IA, May 19th, 2005

B. Patents, Disclosures, and Technology Transfer

US Patent No. 11,364,536 “Layered slab manufacturing system and method”, Johnson, E.M, **Frank, M.C.**, Guthy, H.V., and Pattabiraman, K., June 21, 2022

Invention Disclosure, ISURF 04795, “ANA-Manufacturability Analysis Software Platform”, **Frank, M.C.**, Peters, F.E., Dorneich, M., Jackman, J.K., Chen, N. [†], Hou, G. [†], Hoefer, M. [†], June 6, 2018

US Patent No. 9,795,718 B1 “A Method for Machining Metallic Foam”, **Frank, M.C.**, October 24, 2017

Invention Disclosure, ISURF #04264, “Casting Analysis Software: CastingANA”, **Frank, M.C.**, F. Peters, P. Barnawal, A. Joshi[†], N. Chen[†], C. Monroe, 2014

Invention Disclosure, ISURF #04265, “Machinability Analysis Software: MachiningANA”, **Frank, M.C.**, F. Peters, P. Barnawal, A. Joshi[†], G. Hou[†], Y. Li[†], 2014

Invention Disclosure, ISURF #04176, “CNC-RP: Software for Rapid Prototyping and Manufacturing Using CNC Machining”, **Frank, M.C.**, J. Petrzela[†], A. Joshi[†], W. Boonsuk[†], A. Renner[†], 2013

US Patent Application PCT/US2012/0036231 “Fabric Winding Machine”, B. Wollner, F.E. Peters, **Frank, M.C.**, Filing Date: May 3, 2011

US Patent No. 6,723,363 “Coating Foods and Pharmaceuticals with an Edible Polymer Using Carbon Dioxide”, Ziegler, G.R., **Frank, M.C.**, and Wysk, R.A, April 20, 2004

Invention Disclosure ISURF # 03181, “Rapid Manufacturing and Prototyping of Wood Moldings”, **Frank, M.C.**, Submitted July 30, 2004

C. Funded Grants and Contracts

Listed as:

Investigators and Institutions

Title of Grant/Contract

Funding Agency

Dates

Total \$ Amt. /Amt. to ISU /Amt. to M.C. Frank/ % of funds cost share, 0% if not specified

Role on Project

F. Peters, **M.C. Frank**, J. Jackman, C. Mackenzie,
Digital Innovative Design for Reliable Casting Performance
Subcontract: Steel Founders Society of America; Original award: Defense Logistics Agency,
January 2018 – September 2024
\$1,285,000
Co-PI

M.C. Frank (ISU)

Automated CNC Process Planning Software: CNC-RP
Digital Manufacturing and Design Innovation Institute-16-03-01
August 2017 – May 2018
\$236,000/\$236,000/\$236,000 (50% cost share),
PI

B. Beckmann (GE Global Research), **M.C. Frank**, F. Peters (ISU)
Elastic Cloud-Based Make
Digital Manufacturing and Design Innovation Institute 14-01-10
April 2016 to May 2017
\$3,500,000/\$300,000/\$150,000/ (50% cost share)
PI on ISU Subcontract

M.C. Frank, F. Peters, J. Jackman, M. Dorneich (ISU)
Automated Manufacturability Analysis Software – “ANA”: Early intervention to aid the conceptual design process and accelerate the digital path to manufacturing
Digital Manufacturing and Design Innovation Institute 14-01-07
April 2016- August 2017
\$2,139,656/\$2,139,656/\$534,914/ (50% cost share)
PI

F. Peters, **M.C. Frank** (ISU)
Rapid Patternmaking Machine Development
Magotteaux Inc.
Jan 2016 – August 2016
\$75,000/\$75,000/\$37,500/
Co-PI

J. Sherwood (UMass Lowell) V. Dayal, **M.C. Frank** (ISU)
FIBERS- Facilitating Industry by Engineering, Road mapping and Science
National Institute of Standards and Technology AMTech program
2015 – 2017
\$496,439/\$58,000/\$29,000/
Co-PI on ISU Subcontract
M.C. Frank, F. Peters (ISU)
Reverse Engineering and Rapid Manufacturing of Legacy Casting Designs
NSF Center for e-Design
Jan 2014-Jan2015
\$30,000/\$30,000/\$15,000/
PI

O. Harrysson (NC State) **M.C. Frank** (ISU)
Automatic Finishing of Metal AM parts to Achieve Required Tolerances and Surface
Finishes
America Makes
March 2014-May 2016
\$1,000,000/\$300,000/\$300,000/
PI for ISU Subcontract

J. Sherwood (UMass Lowell), **M.C. Frank**, F. Peters
Design for manufacturing of wind blades
NSF IUCRC-WindSTAR
Aug 2014 – Aug 2015
\$30,000/\$15,000/\$7,500/
Co-PI

C. Niezrecki (UMass Lowell), **M. C. Frank** (ISU)
NSF IUCRC Planning Grant, “WindSTAR – Wind Energy Science Technology and
Research”
National Science Foundation
June 2012 – June 2013
\$49,000/\$11,500/\$11,500/
PI for ISU subcontract

M. Traband (Penn State ARL) **M.C. Frank** (ISU)

The iFab Foundry
DARPA
June 2012 – June 2015
\$48,000,000/\$2,500,000/\$2,500,000/
PI for ISU subcontract

T.D. Brown (University of Iowa) **M.C. Frank** (ISU)
Automated Shape Machining of Custom Bone Allograft Implants
Musculoskeletal Transplant Foundation
January 2012 – December 2014
\$300,000/\$150,000/\$150,000/
PI for ISU subcontract

M. Barone (Sandia National Labs) **M.C. Frank**, J. Jackman, F. Peters, V. Dayal (ISU)
Innovative Offshore Vertical-Axis Wind Turbine Rotors
Department of Energy
January 2012 – December 2016
\$4,100,000/\$1,000,000/\$250,000/
PI for ISU subcontract

M.C. Frank (ISU)
Innovative Methods for the Manufacturing of Patient Specific Bone Implants
Grow Iowa Values Fund
November 2010 to May 2012.
\$50,000/\$50,000/\$50,000/
PI

T.D. Brown (University of Iowa) **M.C. Frank** (ISU)
Shape-Machined Structural Fillers for Juxta-Articular Segmental Bone Defects
National Institutes of Health
December 2010-December 2011
\$50,000/\$25,000/\$25,000/
PI for ISU Subcontract

M.C. Frank, J. Jackman, F. Peters, V. Dayal (ISU)
Advanced Manufacturing Innovation Initiative
Department of Energy, Iowa Power Fund, TPI Composites
July 2009-August 2012
\$6,300,000/\$1,053,000/\$263,250/
PI for ISU Subcontract

T.D. Brown (University of Iowa) **M.C. Frank** (ISU)
Shape-Machined Structural Fillers for Juxta-Articular Segmental Bone Defects
National Institutes of Health

December 2009-December 2010
\$50,000/\$25,000/\$25,000/
PI for ISU Subcontract

D.D. Anderson (University of Iowa), **M.C. Frank** (ISU)
Quantifying Fracture Severity Using a 3-D Puzzle Solving Approach
National Institutes of Health, R21
July 2008-June 2010
\$408,264/\$2,500/\$2,500/
Co-Investigator

M.C. Frank (ISU)
Adaptive Equipment and Machine Modification
Woodward Resource Center-Iowa Department of Human Services
July 2008 – June 2009
\$43,900/\$43,900/\$43,900/
PI

T.D. Brown, D.D. Anderson (University of Iowa), **M.C. Frank** (ISU)
Three-Dimensional Virtual Orthopaedic Reconstruction of Comminuted Fractures
Carver Medical Research Initiative Grant
2007
\$29,720/\$1,000/\$1,000/
Co-Investigator

M.C. Frank (ISU)
Adaptive Equipment and Machine Modification
Woodward Resource Center-Iowa Department of Human Services
July 2007 – June 2008
\$43,900/\$43,900/\$43,900/
PI

M.C. Frank (ISU)
A Rapid Manufacturing System for the Machining of Service Parts
Deere and Company
January 2006-August 2009
\$140,000/\$140,000/\$140,000/
PI

F. Peters, **M.C. Frank**, J. Jackman (ISU)
Advanced Steel Castings

Department of Defense, collaborative project with University of Iowa, University of Northern Iowa, Steel Founders Society of America and Benet Laboratories
 November 2006 - April 2009
 \$1,050,000/\$250,000/\$83,333/
 Co-PI

M.C. Frank (ISU)

Adaptive Equipment and Machine Modification
 Woodward Resource Center-Iowa Department of Human Services
 July 2006 – June 2007
 \$43,900/\$43,900/\$43,900/
 PI

F. Peters, **M.C. Frank**, S. Vardeman, M. Morris (ISU)

A Study of the Food Manufacturing Industry of Iowa: Focus on Packaging
 Center for Industrial Research and Service, ISU
 January 2006-October 2006
 \$20,000/\$20,000/\$5,000/
 Co-PI

F. Peters, **M.C. Frank** (ISU)

Engineering Instrumentation
 Department of Energy through ATI
 May 2005-April 2009
 \$866,847/\$866,847/\$433,424/ (54% cost share)
 Co-PI

M.C. Frank, F. Peters, S. Chumbley (ISU)

Welding Process Advancements for Wear Resistant Augers
 Industrial Hardfacing Inc. /Grow Iowa Values Fund
 December 2005-May 2007
 \$60,000/\$60,000/\$20,000/
 PI

D. Pending Grants and Contracts

III. TEACHING AND STUDENT MENTORING

A. Instruction for ISU

SEM	Course	L a b	Cred.	TA	#Students
F 2003	IE 248 Manufacturing	x	3	2	85
S 2004	IE 545 Rapid Prototyping		3		12
F 2004	IE 248 Manufacturing	x	3	2	75

F 2004	IE 449/549 CAD/CAM		3		18
F 2005	IE 101 Intro to IE		R		21
F 2005	IE 248 Manufacturing	x	3	2	77
F 2005	IE 545 Rapid Prototyping		3		21 (13 EDE)
S 2006	IE 101Intro to IE		R		32
F 2006	IE 101Intro to IE		R		30
F 2006	IE 248 Manufacturing	x	3	2	63
F 2006	IE 449/549 CAD/CAM		3		18
S 2007	IE 101 Intro to IE		R		67
F 2007	IE 101 Intro to IE		R		32
F 2007	IE 248 Manufacturing	x	3	2	72
F 2007	IE 545 Rapid Prototyping		3		21 (8 EDE)
S 2008	IE 101 Intro to IE		R		53
F 2008	IE 101Intro to IE		R		20
F 2008	IE 248 Manufacturing	x	3	2	63
F 2008	IE 449/549 CAD/CAM		3		16
S 2009	IE 101 Intro to IE		R		56
S 2009	IE 545xM-(Dual Degree)				33
F 2009	IE 101 Intro to IE		R		26
F 2009	IE 248 Manufacturing	x	3	2	77
F 2009	IE 545 Rapid Prototyping		3		23 (6 EDE)
S 2010	IE 101 Intro to IE		R		78
F 2010	IE 101Intro to IE		R		25
F 2010	IE 248 Manufacturing	x	3	2	76
F 2010	IE 449/549 CAD/CAM		3		34
S 2011	IE 101 Intro to IE		R		80
F 2011	IE 101 Intro to IE		R		30
F 2011	IE 248 Manufacturing	x	3	3	105
F 2011	IE 545 Rapid Prototyping		3		23 (10 EDE)
S 2012	IE 101 Intro to IE		R		89
F 2012	IE 101 Intro to IE		R		41
F 2012	IE 248 Manufacturing	x	3	3	94
F 2012	IE 449/549 CAD/CAM		3		34
S 2013	IE 101 Intro to IE		R		93
F 2013	IE 101 Intro to IE		R		54
F 2013	IE 545 Rapid Prototyping		3		22 (8 EDE)
S 2014	IE 101 Intro to IE		R		119
S 2014	IE 432 Industrial Automation	X	3	1	29
F 2014	IE 101 Intro to IE		R		56
F 2014	IE 449/549 CAD/CAM		3		31
S 2015	IE 101 Intro to IE		R		143
S 2015	IE 432 Industrial Automation	x	3	2	65
F 2015	IE 101 Intro to IE		R		65
F 2015	IE 432 Industrial Automation	x	3	2	68
F 2015	IE 545 Rapid Prototyping		3		36 (6 EOL)
S 2016	IE 101 Intro to IE		R		142
F 2016	IE 101 Intro to IE		3		54
F 2016	IE 432 Industrial Automation	x	3	2	89
F 2016	IE 449/549 CAD/CAM		3		32
S 2017	IE 101 Intro to IE		R		117
F 2017	IE 248 Manufacturing	x	3	6	84
F 2017	IE 432 Industrial Automation	x	3	2	90
S 2018	IE 545 Rapid Prototyping		3		22
F 2018	IE 432 Industrial Automation	x	3	2	87
S 2019	IE 449/549 CAD/CAM		3		18
S 2019	IE 445/545 Rapid Prototyping		3		38

F 2020	IE 432 Industrial Automation	x	3	1	37
S 2021	IE 448 Manufacturing Systems		3	.5	117
S 2021	IE 445/545 Rapid Prototyping		3		42
F 2021	IE 432 Industrial Automation	x	3	1	36
S 2022	IE 448 Manufacturing Systems		3	.5	82
S 2022	IE 449/549 CAD/CAM		3		33
F 2022	IE 432 Industrial Automation	x	3	1	41
S 2023	IE 448 Manufacturing Systems		3	.5	87
S 2023	IE 445/545 Additive Manufacturing		3		33
F 2023	IE 432 Industrial Automation	x	3	1	48
F 2023	IE 248 Manufacturing	x	3	2	82

B. Curriculum Development Activity for ISU

IE 545 – Rapid Prototyping and Manufacturing: *Introduction to rapid prototyping processes and rapid manufacturing methods. Operating principles and characteristics of current rapid prototyping processes. Principles of Additive Manufacturing (AM), methods and systems. Selection criteria for processes based on model and test requirements. Rapid methods in manufacturing processes and rapid tooling.* First offered in Spring 2004 (starting 18/19 academic year: dual-listing as IE 445/545).

C. Supervision of Students as Major Professor

Ph.D.

Eric Weflen, PhD., I.E., (co-advised with F. Peters) – December 2023

Mohamed Eldakrouy, PhD., I.E., – expected August 2024

Guangyu Hou, PhD., I.E., – August 2019: “Computing Tool Accessibility of Polyhedral Models for Toolpath Planning in Multi-axis Machining”, *Software Engineer*, Mathworks

Niechen Chen, PhD., I.E. – August 2018, Topic: “Automated Process Planning for Metal Hybrid Additive and Subtractive Manufacturing”, *Assistant Professor*, Northern Illinois University

Esra’a Abdel-All, PhD., I.E., (co-advised with R. Stone), – May 2018, Topic: “The Implication of Rapid Technologies on the Design Process”, *Acting Head of the Industrial Engineering*, Jordan University of Science and Technology

Siqi Zhu, PhD., I.E., – December 2015, Topic: “An Automated Method for the Layup of Fiberglass Fabric”, *Automation Engineer*, Whirlpool

Ashish Joshi, PhD., I.E., – May 2015, Topic: “Computer Aided Process Planning for Multi-axis CNC Machining using Feature Free Polygonal CAD models”, *Software Product Manager*, Siemens CAD/CAM, Los Angeles

Shuangyan Lei, Ph.D., I.E., – May 2014, Topic: “Process Planning for the Subtractive Rapid Manufacturing of Heterogeneous Materials: Applications for Automated Bone Implant Manufacturing”, *Software Engineer*, Siemens PLM

Fanqi Meng, Ph.D., I.E., (co-advised with F. Peters) – August 2012 “Measurement, Analysis and Process Planning for the Layup of Unidirectional Fabrics”, *Software Engineer*, Stryker

Xiaoming Luo, Ph.D., I.E., – December 2009, Topic: “Methods for Rapid Pattern Manufacturing”, *Digital Manufacturing Engineer*, TE Connectivity

Wutthigrai Boonsuk, Ph.D., I.E., – August 2009. “Automatic Separation of Bone Joint Structures for Medical Image Reconstruction”, *Associate Professor*, Eastern Illinois University

Ye Li, Ph.D., I.E., – August 2008. “Re-design and Process Planning for Free-form surfaces under a Rapid Manufacturing Environment”, *Associate Professor*, Bradley University

Danni Wang, Ph.D., I.E., – May 2007 (co-advised with F. Peters). “A General Material Removal Strategy Based on Surface Sampling and Reconstruction on Unknown Objects”, *Senior Equipment Engineer*, Intuitive Surgical

M.S.

Michael Ginther, M.S., I.E.,- Expected Aug. 2024

Eric Weflen, M.S., I.E., - May 2020, PhD ISU IMSE

Jakob Croghan, M.S., I.E., – Dec 2019, *Engineer*, Rockwell

Alicia Guzman-Gutierrez, M.S., I.E., – May 2018, *Engineer*, Caterpillar

Ziyang He, M.S., I.E., – Aug. 2017, *PhD Student*, Columbia

Michael Hoefer, M.S., I.E., – May 2017, *PhD Candidate*, U. of Colorado

Kiersten Eberhart, M.S., I.E., – May 2016, *Engineer*, Puget Sound Naval Shipyard

Nick Hennessy, M.S., I.E., – May 2016, *Engineer*, Dupont Pioneer

Vishal Mane, M.S., I.E., – May 2016, *Operations Engineer*, FTD

Niechen Chen, M.S., I.E., – Aug 2015, PhD at ISU, *Assistant Professor*, N. Illinois University

Guangyu Hou, M.S., I.E., – Dec. 2015, PhD Student, ISU

Kuntal Barhate, M.S., I.E., – May 2013, Co-Founder, Bulb and Key

Siqi Zhu, M.S., I.E., – May 2013, PhD at ISU, Automation Engineer, Whirlpool

Shawn Spencer, M.S., I.E., – May 2011, Senior Mobile Developer, Project MZ

Corey Magnussen, M.S., I.E., – May 2011, Process Engineering Lead, TPI Composites

Ashish Joshi, M.S., I.E., – Dec. 2010, PhD at ISU, Software Engineer, Siemens CAD/CAM

Rajesh Karthikeyan, M.S., I.E., – Dec. 2010, Sr. Program Manager, FBA S. Chain, Amazon

Joe Petrzela, M.S., I.E., – Aug 2009, ME PhD at MIT, V.P, Spacecraft, Space X

Christopher Hunt, M.S., I.E., – May 2009, Quality Engineer, Accumold

Alex Renner, M.S., I.E., – August 2008, Pursuing PhD at ISU

Abhijeet Makhe, M.S., I.E., – August 2005, Bus. Int. Architect, MFS Inv. Management

Cliff Sacco, M.Eng. – May 2005, Project Engineer, Deere and Company

Wutthigrai Boonsuk, M.S., I.E., – May 2005, PhD at ISU, Assistant Professor, E. Illinois U.

D. Service on Graduate Student Committees

Current Ph.D. Students:

Alex Renner, ME
Zhongbo Cao, E CPE
Michael Mendoza, MSE

Joe Vanstrom, ABE
Andrew Martin, MSE
Sharon Lau, IMSE

Current M.S. Students:

Bradley Coffman, IMSE
Anirudh Ramakrishna, IMSE

Sandeep Ravi-Kumar, IMSE
Guangyu Hou, Com S

Graduated PhD Students:

Wisam Abu Jadayil, ME
Brice Batemon, ABE

Suphalat Chittamvanich, IMSE
Steve Devlin, ABE

Paul Ackerson, ME
Bo Xu, ME
Jerry Cao, ECpE
Zhongyuan Qian, MSE
Daniel Schimpf, IMSE
Cheng Deng, ME
Marisol Martinez, ME/HCI

Omid Hadad, IMSE
Andrew Frerichs, MSE
Huiyi Zhang, IMSE/WESEP
Sunil Chakrapani, AeroE
Cheng Deng, ME
Ahmad Mumani, IMSE

Graduated M.S. Students:

Derek Hoffman, Statistics
Justin Anderson, IMSE
Brian Harwood, IMSE
Avery Menefee, IMSE
Gokcer Daricilar, IMSE
Trenton Rolling, IMSE
Abhinav Anand, IMSE
Roy Stevenson, IMSE
Stuart Nielsen, CE
Jess Sacco, SYS E
Robin Thoppil, IMSE
Matthew Sutton, SYS E
Nick Kuennen, IMSE
Jamie Kovalaske, SYS E
Lei Yu, IMSE
Fanqi Meng, IMSE
Clair Franzen, SYS E
Greg Saveraid, IMSE
Marisol Martinez, HCI/ME
Saurabh Gupta, ME
Ty Hill, SYS E
Catherine Peloquin, HCI/ME
John Christen, IMSE
Jeffrey Postal, SYS E
Elease McLaurin, IMSE

Ricky Hardis, IMSE
Jenna Pritchard, IMSE
Saurabh Gupta, ME
Brice Batemon, ABE
Luke Schlangen, IMSE
Anastacia Macallister, ME
Michael Rickers, IMSE
Wade Johanns, IMSE
Paul Ackerson, ME
Ben Wollner, IMSE
Catherine Peloquin, ME
Rodger Blum, ME
Lijin Kottayil Raghaven, IMSE
Justin Walker, IMSE
Scott Von Busch, IMSE
Sunil Chakrapani, AeroE
Brad Coffman, IMSE
Michelle Voelker, IMSE
Anirudh Ramakrishna, IMSE
Ryan Deronde, ME
Jaipravin Vijayarangan, IMSE
Andrew Martin, MSE
Jianqiang Li, IMSE

E. Supervision of Post-Doctoral Students and Professional Staff

F. Supervision of Independent Study and Undergraduate Research

David Berendt, IMSE-URA Research Assistant, 2023/2024
Emma Bailey, IMSE-URA Research Assistant, 2021-2023
Matthew Lakota, IMSE-URA Research Assistant, 2020/2021
Emily Judd, NSF REU Research Assistant, 2015
Sam Cook, NSF REU Research Assistant, 2013

David Deisenroth, NSF REU Research Assistant, 2012
Scott Oberbroekling, Undergraduate Research Assistant, S/F 2008
Joe Petrzeka, Undergraduate Research Assistant, F 2007
Ian Moodie, Freshman Honors Program, S 2006
Alex Renner, Undergraduate Research Assistant, S 2006
Jennifer Shadle, Undergraduate Research Assistant, F 2006
Joshua Adams, Undergraduate Research Assistant, F 2005
Mark Williamson, Undergraduate Research Assistant, F 2005

G. Non-ISU Instruction (e.g. Short Courses, Workshops, Training)

H. Other Teaching and Student Mentoring Contributions

Accompanied Study Abroad students to Brunel University, Uxbridge, UK, 2005

IV. INSTITUTIONAL SERVICE

A. University-Level Service

Faculty Senate: 2020-
Governance Council: 2020-
Chair, Governance Council: 2021 -
Administrative Council: 2021-
Executive Board: 2021-
Vice President for Diversity and Inclusion Council: 2016-2017
University Committee on Diversity: 2011- 2015
Chair: Subcommittee on Academic Affairs: 2011-2013

B. College-Level Service

UGP Committee, 2023-
P&T Committee, 2021-
ABET Committee, 2021-
CNDE Faculty Search Committee, 2014-2015
ABE Faculty Search Committee, 2013-2014
Chair, Diversity Committee, S2011-2017
Diversity Committee: S2010-2017
IMSE Department Chair Search Committee, 2010-2011
Dean's Task Force: Innovations in Education S2010
Undergraduate Scholarships and Awards, 2005-2018

C. Department-Level Service

Associate Chair of Dept, 2023-
Director of Undergraduate Education, 2023-
Chair, Curriculum Committee, 2023-
Co-chair, Laboratory and Space Committee, 2021-2023

Faculty Advancement Committee, 2020-
Chair, ABET Committee, 2021-
Chair, Faculty search committee, 2021-2022
Chair, Faculty search committee, 2019-2020
Curriculum Committee, 2018-present
Diversity and Inclusion Committee, 2017-2020
Chair, Diversity and Inclusion Committee, 2017-2018
Chair, PR Committee, 2014-2017
Chair, Faculty search committee, 2011-2012
Graduate Committee, 2006-2010
Faculty Advisor: Institute of Industrial and Systems Engineers (IISE), 2006-2023
Space, Facilities Planning, and Educational Resources, 2003-2023

V. PROFESSIONAL SERVICE

A. Editorial and Review Service for Manuscripts

Reviewer:
Journal of Manufacturing Processes
Materials Science and Engineering
Computers and Industrial Engineering
Rapid Prototyping Journal
Journal of Manufacturing Systems
American Journal of Veterinary Research

B. Service to Professional Societies

Session Chair, Solid Freeform Fabrication Symposium (SFF) 2017, 2019, 2021
Session Chair, Manufacturing Science and Technology (MS&T) 2017
Track Chair, IIE Conference, Manufacturing and Design Track, Co-Chair with Iris Rivero (Texas Tech), 2007
Session Organizer and Paper Review Coordinator: ASME 32nd Design Automation Conference, 2006
Session Organizer on Rapid Prototyping: IIE conference, 2005
Session Chair: SME NAMRC conference, 2005
Session Leader: SME Technology Summit, 2005

C. Grant Review Activities

D. Government, Educational, or Corporate Advisory Committees

Platinum Advisory Group, the National Additive Manufacturing Innovation Institute (NAMII - America Makes), representing ISU, Youngstown Ohio, 2016-2018

Chair for the Hybrid Manufacturing Working Committee, member of Technical Advisory Committee, Consortium for Advanced Hybrid Manufacturing (CAM-IT), National Institute of Standards and Technology AMTech program, 2015-2017

Technical Advisory Committee (TAC), the Digital Manufacturing and Design Innovation Institute (DMDII), representing ISU, Chicago Illinois, 2014-2020

Oversight Steering Committee: Advanced Manufacturing Innovation Initiative (AMII), TPI Composites, Iowa State University, Sandia National Laboratories, 2009-2013

E. Other Professional Service

Judge for James F. Lincoln Foundation Awards, 2006 -

VI. OUTREACH, COMMUNITY ENGAGEMENT AND OTHER ACTIVITIES

A. Outreach Activities

Presented a *Rapid Prototyping and Reverse Engineering* Workshop for Iowa Industries, ISU, April 11th 2006

Presented lecture for the ISU “College for Seniors”, covering research topics in the IMSE department including *Rapid Prototyping/Additive Manufacturing*, October 26th 2004

B. Community Engagement Activities

Judge for the State Science and Technology Fair of Iowa, March 2006

C. Other Activities

Rapid Prototyping/Additive Manufacturing and Reverse Engineering assistance to Iowa Industries; Creative Composites and Dodgen Industries, NB Outdoors Nexerciser Inc., Pioneer Hi-Bred International, Advanced Component Technologies, Hydrogen Engine Center, Windsor Window, Seneca Tank, USDA/NADC