

## MATTHEW S. SANDERS

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## EDUCATION

- Ph.D.** Industrial Engineering, May 1987, Texas Tech University, Lubbock, Texas.  
Dissertation: *An Analysis of the Effectiveness of Reaming as a Secondary Operation for Hole Production.*
- M.S.** Industrial Professional Technology, December 1981, Indiana State University, Terre Haute, Indiana. Unpublished research paper substituted for master's thesis: *A Survey of Job Satisfaction in the Terre Haute Area.*
- B.S.** Construction Technology, May 1980, Indiana State University, Terre Haute, Indiana.  
Heavy concentration in mathematics
- A.S.** Civil Engineering, February 1978, Tabriz Institute of Technology, Tabriz, Iran.

## EMPLOYMENT HISTORY

**Professor**, July 1999 – Present, (Associate Professor, July 1999 – July 2007; tenured July 2001), Kettering University (formerly GMI Engineering & Management Institute), Department of Industrial and Manufacturing Engineering (formerly Department of Industrial & Manufacturing Engineering and Business), Flint, Michigan. Taught courses in Industrial Engineering, Management, Mathematics, and Manufacturing Engineering programs, conducted research, provided services, and accepted administrative responsibilities.

**Coordinator/Faculty**, January 1999 – August 1999, Marshall University, Department of Engineering Technology, Huntington, West Virginia. Taught courses, conducted research, and fulfilled administrative duties.

**Professor**, September 1986 – September 1998, (Assistant Professor, September 1986 – August 1993; tenured September 1992; Associate Professor, September 1993 – August 1998), University of New Haven, Department of Industrial Engineering (formerly Department of Industrial Engineering and Computer Science), West Haven, Connecticut. Taught courses in Industrial Engineering, Management, and Mathematics programs, conducted research, provided services, and fulfilled administrative responsibilities.

**Adjunct Professor**, September 1985 – September 1986, Wayland Baptist University, Lubbock Center, Lubbock, Texas. Taught courses.

**Part-time High School Instructor**, September 1984 – September 1986, Texas Tech University, Upward Bound Program. Taught pre-college mathematics.

**Part-time Instructor, Research Assistant, and Teaching Assistant**, January 1982 – January 1986, Texas Tech University, Department of Industrial Engineering. Held a variety of positions based on the needs of the department.

**Graduate Assistant**, June 1982 – July 1984, Texas Tech University, Special Services. In charge of the mathematics laboratory for disadvantaged and disabled students.

**Tutor**, June 1982 – August 1985, Texas Tech University, PASS (Program for Academic Support Services) Center.

**Teaching Assistant**, September 1980 – August 1981, Indiana State University, Department of Manufacturing and Construction Technology, Terre Haute, Indiana.

**Assistant Supervisor, Supervisor**, May 1975 – February 1978, General Mechanics Corporation, Tabriz Refinery. Hired as an Assistant Supervisor and promoted to Supervisor in 1976. Managed staff and had full responsibility for their construction project.

**Principal and Teacher**, September 1972 to August 1974, Iranian Army. In the first six months of an intensive program, I was trained to teach and be in charge of an elementary school.

## TEACHING

### 1. Teaching Experience

I have over 30 years of teaching experience – from middle school to graduate level (24 years full-time, 22 years at the college level). In addition to being a full-time elementary teacher for two years, on and off, I have taught numerous two–to eight–week engineering, mathematics, and computer based courses to seventh through twelfth graders since 1984.

### 2. Teaching Award

Received the 1993 University Award for Distinguished Teaching, University of New Haven, September 1993.

Honorable John G. Rowland, the Governor of Connecticut, recognized my role and help in making the achievement of Connecticut Pre–Engineering students and teachers possible, on the Annual Graduation Program for the Class of 1997. This recognition also included an official statement congratulating the University of New Haven for its’ role in CPEP.

### 3. Graduate Courses Taught

At **Kettering University**, in the Industrial and Manufacturing Engineering Department and in the Business Department, taught the following graduate course (multiple times):

1. Industrial Engineering Concepts
2. Industrial Engineering and Lean Enterprise
3. Management Science

At the **University of New Haven**, in the departments of Industrial Engineering and Management, taught the following graduate courses (many of them multiple times):

1. Decision Analysis
2. Manufacturing Analysis
3. Operations Research
4. Design and Analysis of Experiments
5. Probability Theory
6. Research Methods in Business Administration

#### **4. Undergraduate Courses Taught**

At **Kettering University**, in the Industrial and Manufacturing Engineering, Management, and Mathematics programs, taught the following undergraduate courses (many of them multiple times):

1. Enterprise Systems II: Supply & Delivery Chain Engineering
2. Design for Manufacture and Assembly
3. [Engineering Economy; Systems Analysis I: Engineering Cost Analysis; Systems Management I: Engineering Cost Analysis]\*
4. Industrial Engineering Seminar (coordinated)
5. [Industrial Project Scheduling; Systems Management II: Project Planning, Scheduling, & Management]\*
6. Engineering Statistics I
7. Introduction to Systems
8. [Operations Research; Systems Modeling I: Deterministic Models]\*
9. [Systems Design III: Lean Systems Design & Implementation; Senior Design Project]\*
10. Systems Analysis II: Production Systems Design
11. Systems Analysis III: Scheduling
12. Calculus I
13. Financial Concepts & Cost Control
14. Statistics for Management I
15. Management Science I

\*[] There are some minor differences among the courses inside of each set of brackets.

Also, coordinated and taught (team teaching) Lean Manufacturing Systems: Process & Methods, distance learning, ArvinMeritor, Winter 2007. Taught (co-teaching) Structured Problem Solving, distance learning, ArvinMeritor, Spring 2007. Taught (co-facilitated) a two-day short course (Continued Education), Activity Based-Costing/Quoting, Delphi, Saginaw, Michigan, August 2004.

At **Marshall University**, in the Department of Engineering Technology, taught the following courses:

1. Production Activity Control
2. Computer–Aided Design (two sections)

At the **University of New Haven**, in the departments of Industrial Engineering, Management, and Mathematics, taught the following courses (many of them multiple times):

- |   |                                 |
|---|---------------------------------|
| 1. Cost Control                               | 2. Computer–Aided Manufacturing |
| 3. Engineering Economics                      | 4. Finite Mathematics           |
| 5. Freshman Experience                        | 6. Introduction to Engineering  |
| 7. Manufacturing Processes                    | 8. Operations Research          |
| 9. Probability Theory                         | 10. Production Control          |
| 11. Quality Control                           | 12. Robotics in Manufacturing   |
| 13. Metrology and Inspection in Manufacturing |                                 |

At **Wayland Baptist University**, taught the following undergraduate courses:

- |                                   |                      |
|-----------------------------------|----------------------|
| 1. Business Computer Applications | 2. BASIC Programming |
| 3. Data Processing                |                      |

At **Texas Tech University**, as a *Part-time Instructor*, Department of Industrial Engineering, taught:

- |  |  |
|--|--|
| 1. Systems Planning and Control  | 2. Manufacturing Processing Laboratory |
| 3. Statistical Quality Control/Linear Programming/Production Control (a leveling course at the graduate level) |  |

As a *Teaching Assistant*, assisted in:

- |                             |                           |
|-----------------------------|---------------------------|
| 1. Manufacturing Processing | 2. Engineering Statistics |
| 3. Inventory Systems.       |                           |

As a *Graduate Assistant* (June 1982 – July 1984), Special Services, in charge of the mathematics laboratory for disadvantaged and disabled students. Assisted students with undergraduate mathematics courses ranging from Fundamentals of Mathematics to Calculus III. Also, assisted students with quantitative courses such as Engineering Economics, Probability and Statistics, Statics, Calculus for Engineering, and Calculus for Engineering Technology.

As a **Tutor**, PASS (Program for Academic Support Services Center), tutored students in undergraduate quantitative courses as well as GRE preparation.

At **Indiana State University**, as a *Teaching Assistant*, in Department of Manufacturing and Construction Technology, was responsible for the operation of the construction laboratory and the supervision of undergraduate students in conducting their laboratory projects. Also, assisted with architecture drawing courses.

## **5. Pre-College Courses Taught**

At **Kettering University**, Office of the Minority Student Affairs–Pre–College Programs and Office of Student Affairs–Women’s Resource Center, taught middle and high school students in programs such as Kettering University’s Tech 2000 Program, Spectrum Program, Flint

Community Schools 21<sup>st</sup> Century Community Learning Centers Initiative Program, Science in the City, Making Academics Priority Program, 21<sup>st</sup> Century Women, and Kamp Kettering.

At the **University of New Haven**, taught middle and high school students in the sponsored programs such as Young Scholars Program, Connecticut Pre-Engineering Program, and others.

At **Texas Tech University**, Upward Bound Program, taught for more than 80 minority students preparing for college who were academically outstanding but economically disadvantaged – teaching was daily during the summers and twice weekly during the academic year.

## **ADMINISTRATIVE EXPERIENCE/RESPONSIBILITIES**

While involved with various academic activities, accepted the following administrative responsibilities:

### **1. Kettering University**

***Coordinator***, July 2005 – Present, coordinate various activities of the Agent Fate Project and managed its staff (Kettering group consists of faculty members, visiting professors, post-doctoral researchers, graduate students, Co-Op students, and professional practitioners), please refer to the “Research Experience” section for more details.

***CE’s Liaison***, (Continuing Education Faculty Liaison – Industrial and Manufacturing Engineering Department), July 2006 – June 2007, provided technical assistance to the Professional Development & Continuing Education division of the Graduate Studies & Corporate Connections when negotiating with continuing education course offerings to regional industries. Served as a Subject Matter Expert (SME) when offering the industrial & manufacturing engineering related courses.

***ABET EC 2000 Program Assessment Leader***, October 2001 – January 2003, collected and interpreted data and information from the Department’s constituents (faculty, students, alumni, employers, advisory board, and accrediting agencies such as the University, ABET, and North Central Association) and prepared the first draft of the self-study report for the 2003 ABET visit.

***Faculty Senate Secretary***, January 2001 – December 2002. In addition to normal duties of the Senate Secretary, performed the following special assignments for the Provost:

Designed the Web page for all the assessment activities of all the University’s academic programs as the Kettering Assessment Activities Web page (Spring through Fall 2002).

Researched and collected information on a number of different universities’ faculty handbooks and prepared a draft document as the Table of Contents of the Faculty Handbook (Spring 2002).

Researched and collected information on intellectual properties and prepared a draft document as the Intellectual Properties Policies Chapter of the Faculty Handbook (Spring 2002).

Gathered and organized faculty responsibilities and prepared a draft document to be place in the Faculty Handbook (Spring 2002).

Researched and collected information on tenure and promotion procedures and guidelines and prepared a draft document of the new Tenure and Promotion Chapter of the Faculty Handbook (Spring 2001).

## **2. Marshall University**

*Coordinator*, coordinated departmental activities such as advising students, maintaining students' records, administrating adjunct faculty, scheduling. Played a major role in responding to and incorporating the changes stated on the Final Statement of the ABET Evaluators for the Engineering Technology programs.

## **3. University of New Haven**

*Assistant Dean*, May 1997 – September 1998, School of Engineering and Applied Science. Primary responsibilities included organizing major events and special programs. Additional responsibilities included but not limited to initiating, formulating, securing the funds, and directing University's Engineering Outreach programs and attracting students to the University.

*Campus Director*, September 1996 – September 1998. Served as a liaison with the Connecticut Space Grant College Consortium, NASA. Reviewed and assisted in awarding grant proposals submitted to the Consortium. Promote grant development among the University's faculty and students.

*Site Coordinator*, September 1995 – September 1998, Connecticut Pre-Engineering Program (CPEP), Inc., Bloomfield, Connecticut. Served as a liaison with the University of New Haven, New Haven public schools, and CPEP joint activities. Oversaw CPEP educational after-school, Saturday, and Summer programs in New Haven, Connecticut. Supervised the New Haven site teachers and co-directed in organizing the yearly statewide CPEP Day Competition as well as the New Haven Science Fair.

*Grants' Liaison*, September 1996 – September 1997, Department of Advancement and Development. Served as a liaison with faculty in promoting grant development. Solicited funding needs and developed fundable proposals. Also, developed outside contacts and partnerships related to grant activities. Played a major role in preparing the Coca Cola scholarship proposal and organized meetings between the President of the Coca Cola Foundation and the officials of the University, New Haven Public School Systems, and CPEP, Inc.

*Acting Chair*, June 1994 – August 1998, (as needed—usually in the summer terms), Department of Industrial Engineering. Involved in daily departmental and academic activities.

*Evening Student Advisor*, January 1994 – June 1998, Office of Academic Services–Part–time Division. Mainly advised adult professionals and dealt with their academic concerns and needs.

## SCHOLARLY/PROFESSIONAL ACTIVITIES

### 1. Book reviewed

S. Robinson, “*Engineering Economy*,” John Wiley & Sons, (in press)

L. Blank and A. Tarquin, “*Engineering Economy*,” 6<sup>th</sup> Edition, McGraw-Hill, 2005, ISBN 0-07-291863-2.

R. Zarama, L. Pinzon, C. Ramirez, and N. Jimenez, “*Towards the Design of the Professional Profiles in an Industrial Engineering Curriculum*,” Paper No. 08-022, Chapter in Innovations 2008: World Innovations in Engineering Education and Research, (iNEERj).

### 2. Publications and/or Presentations

B. Markicevic, H. Navaz, A. Zand, H. Li, L. Beholz, C. Rincon, Y. Sikorski, and **M. Sanders**, “*Determination of relative permeability and capillary pressure from unsaturated flow through porous medium*,” 2008 DTRA/JSTO/CBDP Chemical & Biological Defense Physical Science and Technology (CBDP S&T) Conference, New Orleans, LA, November 17-21, 2008. (Accepted and to be presented).

A. Zand, H. Li, J. Meyers, E. Bowden, B. Markecevic, Y. Sikorsi, **M. Sanders**, and H. Navaz, “*Experimental approach to measurements of effective vapor diffusion coefficients in porous Media*,” 2008 DTRA/JSTO/CBDP Chemical & Biological Defense Physical Science and Technology (CBDP S&T) Conference, New Orleans, LA, November 17-21, 2008. (Accepted and to be presented).

H. Li, A. Zand, J. Meyers, E. Bowden, L. Beholz, B. Markicevic, Y. Sikorski, **M. Sanders** and H. Navaz, “*Experimental approach to measurements of effective vapor diffusion coefficients in porous substrates*,” 2008 American Chemical Society – National Meeting & Exposition, Philadelphia, PA, August 17-21, 2008.

H. Navaz, B. Markicevic, A. Zand, Y. Sikorski, E. Chan, **M. Sanders**, and T. D’Onofrio, “*Sessile Droplet Spread into Porous Substrates – Determination of Capillary Pressure Using a Continuum Approach*,” Journal of Colloid and Interface Science, Vol. 325, No. 2, pp. 440-446, 2008. ISSN: 0021-9797. Also available online – [www.elsevier/locate/jcis](http://www.elsevier/locate/jcis).

H. Li, A. Zand, J. Meyers, E. Bowden, L. Beholz, B. Markicevic, Y. Sikorski, **M. Sanders** and H. Navaz, “*Measurements of Effective Vapor Diffusion Coefficients in Porous Substrates*,” Central Regional Meeting of the American Chemistry Society, Columbus, OH, June 10-14, 2008.



A. Zand, N. Walters, N. Bahu, S. Ketterer, **M. Sanders**, Y. Sikorski, R. Cunningham, and L. Beholz, “*Preparation of hydroxylated Polyethylene Surfaces*,” Journal of Biomaterials Science, Polymer Edition, Vol. 19, No. 4, pp. 467-477, 2008. ISSN: 0920-5063. Also available online – [www.brill.nl/jbs](http://www.brill.nl/jbs), E-ISSN: 1568-5616.

A. Zand, Y. Sikorski, **M. Sanders**, and H. Navaz, “*A Simple Laboratory Experiment for the Measurement of Single Phase Permeability*,” Journal of Physical and Natural Sciences, Vol. 1, Issue 2, 2007.

A. Zand, H. Li, J. Meyers, E. Bowden, L. Beholz, B. Markicevic, Y. Sikorski, **M. Sanders**, and H. Navaz, “*Experimental Approach to Measurements of Effective Vapor Diffusion Coefficients in Porous Substrates*,” 2007 Scientific Conference on Chemical & Biological Defense Research Conference, Timonium, MD, November 13-15, 2007.

**M. Sanders**, K. Scott, and J. Hinterman, “*University and County Working Together via a Capstone Project: Focusing on Recycling Facility and Green Community*,” 1<sup>st</sup> National Capstone Conference, University of Colorado at Boulder, June 13-15, 2007.

H. Li, C. Rincon, E. Bowden, A. Zand, Y. Sikorski, **M. Sanders**, and H. Navaz, “*Experimental Measurements of Diffusivity of Vapors through Porous Substrates*,” OSAPS (Ohio Section of American Physical Society), Ypsilanti, MI, May 4-5, 2007.

B. Markicevic, A. Zand, Y. Sikorski, **M. Sanders**, and H. Navaz, “*Experimental and Numerical Predictions of Phase Permeability in Porous Media*,” 2007 Chemical and Biological Information Systems Conference, Austin, TX, January 8-11, 2007.

H. Navaz, A. Zand, B. Markicevic, Y. Sikorski, **M. Sanders**, and E. Chan, “*Scalable Transport Models for Non-Evaporating and Evaporating Sessile Droplets within Porous Substrates*,” 2007 Chemical and Biological Information Systems Conference, Austin, TX, January 8-11, 2007.

B. Markicevic, H. Navaz, A. Zand, Y. Sikorski, and **M. Sanders**, “*The Fate of Chemical Agents Droplet (Sessile) on Porous Substrates*,” 2006 Scientific Conference on Chemical & Biological Defense Research, Hunt Valley, MD, November 13-15, 2006.

L. King, **M. Sanders**, T. Lin, J. El-Sayed, and M. El-Sayed, “*Model for Process of Multidisciplinary Integration of Interdepartmental Courses*,” Chapter in Innovations 2006: World Innovations in Engineering Education and Research, Editors: W. Aung, C. Crosthwaite, R. Vasquez Espinosa, J. Moscinski, Shan-Hwei Ou, and L. Manuel Sanchez Ruiz, iNEER, USA, 2006, pp. 555 – 569. ISSN 1553-9911, ISBN 0-9741252-5-3.

**M. Sanders**, M. Thompson, M. El-Sayed, L. King, and M. Lindquist, “*Assessing Interdisciplinary Engineering Capstone Project*,” Proceedings of the 2006 American Society for Engineering Education (ASEE) Annual Conference and Exposition — Systems Engineering Constituent Committee, Session No. 1190, Chicago, IL, June 2006. [Presented]

**M. Sanders**, M. Chen, S. Behnia, K. Brinker, K. Morrison, and S. Reischling, “*Moving Industrial Engineering Education Beyond Theory Into Real-World Applications*,” Proceedings of the 12<sup>th</sup> International Conference on Industry, Engineering, and Management Systems — Industry and Academic Collaboration Division, Cocoa Beach, FL, March 2006, pp. 291 – 300. [Presented]

**M. Sanders**, “*Using Interdisciplinary Capstone Design to Create a Better Product*,” Proceedings of the 12<sup>th</sup> International Conference on Industry, Engineering, and Management Systems — Education and Training Division, Cocoa Beach, FL, March 2006, pp. 157 – 163. [Presented]

**M. Sanders**, M. Lindquist, and M. Thompson, “*Robobug Design Project for Interdisciplinary Engineering Capstone Students*,” Proceedings of the 12<sup>th</sup> International Conference on Industry, Engineering, and Management Systems — Education and Training Division, Cocoa Beach, FL, March 2006, pp. 164 – 169.

K. Morrison, P. Gheresus, and **M. Sanders**, “*A Methodology for Really Teaching Quantitative Subjects*,” Proceedings of the 12<sup>th</sup> International Conference on Industry, Engineering, and Management Systems — Supply Chain Management Division, Cocoa Beach, FL, March 2006, pp. 576 – 582.

T. Lin and **M. Sanders**, “*A Sweet-Way of Using M&M’s to Introduce DOE*,” Quality Progress, February 2006 Issue, p. 88.

L. King, J. El-Sayed, **M. Sanders**, and M. El-Sayed, “*Job Readiness through Multidisciplinary Integrated Systems Capstone Courses*,” Proceedings of the 2005 American Society for Engineering Education (ASEE) Annual Conference and Exposition — Multidisciplinary Engineering Constituent Committee, Session No. 2471, Portland, OR, June 2005.

T. Lynch-Caris, M. Palmer, and **M. Sanders**, “*Using Pre- and Post-Tests for Course-Level Assessment*,” Proceedings of the 2004 American Society for Engineering Education (ASEE) Annual Conference and Exposition — Engineering Division, IE Accreditation and Program Issues Session, Session No. 1657, Salt Lake City, UT, June 2004.

**M. Sanders** and R. McAllister, “*Twenty First Century Women Prefer Summer Science Kamp*,” Proceedings of the 2003 American Society for Engineering Education (ASEE) Annual Conference and Exposition — Outreach: Future Women in Engineering Division, Nashville, Session No. 1692, TN, June 2003. [Presented]

T. Lin and **M. Sanders**, “*Empty Pop Cans and Analysis of Variance*,” Proceedings of the 2003 American Society for Engineering Education (ASEE) Annual Conference and Exposition — ASEE Multimedia Session, Session No. 2793, Nashville, TN, June 2003.

S. Patro and **M. Sanders**, “*Extensible Markup Language in E-Business Applications*,” 3<sup>rd</sup> Annual University Synergy Program, E-Enterprise 2000 Structure and Systems, Haifa, Israel, September 2000.

M. Sanders and **M. Sanders**, “*Measuring Process Knowledge As a Performance Indicator in Implementation of Enterprise Systems*,” 3<sup>rd</sup> Annual University Synergy Program, E-Enterprise 2000 Structure and Systems, Haifa, Israel, September 2000.

**M. Sanders** and M. Sanders, “*The Challenge of Lowering the Demographic Barriers of the Engineering Work Force*,” On Target, Recruiting and Enrollment Strategies for 2000 and Beyond, The College Board, Number 24, Fall 1996, pp. 18 – 21.

**M. Sanders** and J. Yunan, “*New Approaches to Managing Technically Oriented Companies*,” Chapter in Management of Technology IV, T. M. Khalil and B. A. Bayraktar, eds., Industrial and Management Press, 1994.

J. Yunan, A. Abdel-Wahed, and **M. Sanders**, “*Data Management Using I-CASE Technology for Manufacturing Information Systems*,” Proceedings of the Ninth International Conference on CAD/CAM, Robotics and Factories of the Future, International Society for Productivity Enhancement, New Jersey Institute of Technology, 1993.

**M. Sanders** and J. Yunan, “*Management of High Tech and Low Tech Industries*,” Chapter in Management of Technology III, The Key To Global Competitiveness, T. M. Khalil and B. A. Bayraktar, eds., Industrial and Management Press, Vol. 2, 1992, pp. 1347 – 1356.

**M. Sanders** and S. Annem, “*Planning for Automation in Manufacturing Systems*,” Proceedings of the Eighth Annual Conference of University Programs in Computer-Aided Engineering, Design, and Manufacturing, The University of Michigan, 1990, pp. 47 – 51.

**M. Sanders**, R. Wentworth, and P. Brodt, “*Safety in the Automated Manufacturing Environment*,” Chapter in Ergonomics of Hybrid Automated Systems II, W. Karwowski and Rahimi, eds., Elsevier Science Publishers, 1990, pp. 881 – 888. ISBN 0444887938.

B. Cho and **M. Sanders**, “*Planning, Designing, and Implementing Computer-Aided Manufacturing Systems*,” Chapter in Justification Methods for Computer Integrated Manufacturing Systems, H. R. Parsaei, T. L. Ward, and W. Karwowski, eds., Elsevier Science Publishers, 1990, pp. 252 – 274. ISBN: 0444881530.

**Note:** The book was reviewed in both “The New York Public Library – New Technical Books” and “The Engineering Economist.” Our article was favorably viewed by both publications. .

**M. Sanders** and B. Cho, “*CIM Can Help U.S. Companies Establish a Competitive Advantage in World Markets of the 90s*,” Proceedings of the Eighth Annual Conference of University Programs in Computer-Aided Engineering, Design, and Manufacturing, The University of Michigan, 1990, pp. 143 – 146.

B. Cho, **M. Sanders**, and L. Landaeta, “*Data Modeling for a Computer Integrated Manufacturing Environment*,” Proceedings of the Eighth Annual Conference of University Programs in Computer-Aided Engineering, Design, and Manufacturing, The University of Michigan, 1990, pp. 147 – 152.

M. Montazer, R. Ruiz, and **M. Sanders**, “*Optimal Position of D-Handles on Snow Shovels*,” Proceedings of the Human Factors Society 32nd Annual Conference, 1989, pp. 486 – 489.

**M. Sanders**, P. Brodt, and R. Wentworth, “*Safety in the Industrial Robot Environment*,” Proceedings of the Seventh Annual Conference on University Programs in Computer-Aided Engineering, Design, and Manufacturing, American Society of Civil Engineers, 1989, pp. 190 – 197.

**M. Sanders** and B. Cho, “*Use of a CAM System for Generating Potential Solutions in Machining Processes*,” Proceedings of the Seventh Annual Conference on University Programs in Computer-Aided Engineering, Design, and Manufacturing, American Society of Civil Engineers, 1989, pp. 213 – 220.

**M. Sanders** and M. Gupta, “*Developing the Manufacturing Systems Option in the Industrial Engineering Program at the University of New Haven*,” Proceedings of the Seventh Annual Conference on University Programs in Computer-Aided Engineering, Design, and Manufacturing, American Society of Civil Engineers, 1989, pp. 91 – 97. [Presented]

**M. Sanders** and B. Cho, “*An Application of the Entity-Relationship Model for Organizing a CAM Database*,” Proceedings of the Sixth Annual Conference on University Programs in Computer-Aided Engineering, Design, and Manufacturing, Georgia Institute of Technology, 1988, pp. 248 – 254.

**M. Sanders**, “*An Analysis of the Effectiveness of Reaming as a Secondary Operation for Hole Production*,” Ph. D. Dissertation, Department of Industrial Engineering, School of Engineering, Texas Tech University, Lubbock, Texas, 1987.

**M. Sanders**, “*Something Awry in Iran*,” The University Daily – Texas Tech University, Lubbock, Vol. 60, No. 95, 1985.

### **3. Applied Research Related Grants and Awards**

2007 – Present, “*Preparation of Hydrophilic Orthopedic Surfaces*,” project is funded by McLarren Research Institute, (**PI**, A. Zand, Co-PIs, **M. Sanders** and Y. Sikorski). \$40,000 plus a co-op student sponsorship for one year.

The following research grants are various sections of a multi-million dollars grant known as Agent Fate Program (please see the Research Experience Section for more details). **PI**, H. Navaz, Co-PIs: D. Benson, **M. Sanders**, Y. Sikorski, and A. Zand:

2005 – 2007, “*Chemical and Biological Defense Verification and Validation*,” project is funded by General Dynamics (previously Anteon Corp.).

2006 – 2007, “*Modeling Simulation and Analysis for Chemical and Biological Weapons (CBW) Smoke and Obscurant*,” project is funded by U.S. Army.

2007 – 2008, "*Outdoor Data Validation and Predictive System Development*," project is funded by METSS.

2007 – Present, "*Development of Secondary Evaporation and Absorption Models for Chemical Agents in Porous Substrates*," Project Funded by the Air Force Research Laboratory, Human Effectiveness Directorate, Biosciences and Protection Division, Wright-Patterson AFB, OH.

2006 – 2007, "*Design and synthesis of novel hydrophilic polyethylene surfaces for wear reduction in artificial joints*," project is funded by McLaren Regional Medical Center, (PI, A. Zand, Co-PIs, L. Beholz, **M. Sanders**, and Y.Sikorski). \$40,000 plus a co-op student sponsorship for one year.

Obtained the following Faculty Research Fund Awards from the University of New Haven:

- \$2,000 to defray the travel expenses to Baku, Azerbaijan to investigate the institutionalization of management and/or engineering education in the Silk Road Common Market countries (a collaborative effort between faculty of the Schools of Business and Engineering), Summer 1997.
- \$1,151 to defray travel expenses to Amarillo and Lubbock, Texas to conduct research on an integrated control method for an automated multistage product disassembly system to achieve optimal recyclability, environmentally-conscious manufacturing concept, Summer 1996.
- \$1,300 toward the purchase of a computer system and automated handling equipment for automation of the Industrial Engineering Manufacturing Laboratory, Summer 1994.
- \$2,000 toward the purchase of TM-100 MITUTOYO's Tool-makers Microscope series 176 to further investigate the Effect of Certain Variables on the Amount of Tool Wear in Machining Superlight Composite Materials, Summer 1993.
- \$2,000 toward the purchase of T500 Surface Roughness Tester with T5E Pick-Up and Turbo Software to be used as a tool in analyzing the surface finishes of Machining Superlight Composite Materials, Summer 1991.

Awarded a Faculty Fellowship from the University of New Haven in the amount of \$3,000 to support research on the Effect of Machining Variables on the Amount of Tool Wear in Machining Superlight Composite Materials, Summer 1991.

Wrote several proposals (University of New Haven's Research Assistantship Program) and awarded a number of Research Assistants.

#### **4. Educational Related Grants and Awards**

I have initiated, formulated, authored and/or co-authored as well as have assisted individuals and the University offices in writing a significant number of grant proposals. I was heavily involved in some grants, which are not listed below. For example, I provided assistance in initiating and establishing the Flint Community Schools 21<sup>st</sup> Century Community Learning Centers Initiative at Kettering University. I assisted the Office of the Minority Student Affairs in negotiation of the partnership agreement between Kettering University and the Office of Community Partnerships and Educational Outreach of Flint Community Schools. I assisted in securing the necessary funds for offering the program to the Flint middle schools students for four consecutive terms. In an another academic enrichment program – MAP (Making Academics Priority) – I played similar roles as mentioned above.

With exception of a few which are noted, I was the principle person in executing them, from establishing, running, and administrating, to submitting final reports of the following grants.

\$3,000 (\$1,500 initial stage and \$1,500 for final stage), Marshall University, "*Initiation and Development Grant for E–courses,*" 1999. Developed and completed the initial stage for the Manufacturing Processes E–course.

\$50,000, United Technologies Corporation, "*Tests of Engineering Aptitude, Mathematics and Science (TEAMS) and National Engineering Design Challenge (NEDC) Competitions at the University of New Haven,*" 1998. Developed grant proposal and managed all the logistics of the competitions.

\$50,000, Coca–Cola Foundation, "*University Endowment for Engineering Students,*" 1997. (Worked with Grants and Development offices of the University of New Haven.)

\$500,000, Department of Higher Education, Connecticut Collegiate and Preparation Program (ConnCAP), "*UNH's Engineering Outreach Program–ConnCAP,*" 1997. A five–year program, started 1997, \$100,000 per year with a 5% increase yearly. Developed and directed a science and engineering based program offered for students from seventh through twelfth graders. Supervised and evaluated all budgets, personnel, curriculum, recruitment, reporting, and other related activities.

\$30,000, GTE Foundation, "*Connecticut Pre–Engineering Program at UNH,*" 1995. Developed and directed a two–year educational program focusing on underrepresented students from seventh through tenth graders.

\$238,852, National Science Foundation, "*Manufacturing Engineering: Computer–Integrated Manufacturing,*" 1994. A two–year program, ESI–9452821. Solely responsible for developing and conducting the program under the auspices of NSF, Young Scholars Program, to introduce highly qualified minority, female and other entering eleventh or twelfth grade high school students to educational and career opportunities in manufacturing. It provided "hands–on" experience in the use of computerized integration and controlled manufacturing, as well as basic research methods and ethics.

\$226,080, National Science Foundation, "*Manufacturing Engineering: A 'Head Start' Program—Computer—Integrated Manufacturing*," 1993. A two-year program, ESI-9256073 (slightly different than the above program). Responsible from the development of the proposal to the completion of the program.

Obtained the following grants from the Society of Manufacturing Engineers (SME) Education Foundation, 1988:

- Equipment grant for \$17,500 toward the purchase of a CNC milling machine and a CNC Lathe Desk-Top machine.
- Curriculum Development Grant for \$8,000 to develop two new courses, "Computer – Aided Manufacturing and Robotics in Manufacturing."

Wrote several grant proposals, with some input from department, for funding the Manufacturing Laboratory. In response to these proposals, the Development Office of the University of New Haven has obtained the following:

- A pledge of \$100,000 over five years from Echlin Inc., Branford, CT, 1989.
- Equipment fund for \$25,000 from Marlin Firearms Co., North Haven, CT, 1989.
- A pledge of \$10,000 over two years from Harvey Hubbell Inc., Orange, CT, 1988.
- Equipment fund for \$24,000 from Dresser Industries Inc., Instrument Division, Milford, CT, 1988.
- Equipment fund for \$10,000 from the George I. Alden Trust of Worcester, MA, 1988.

## **5. Pending Proposals/Grants**

*"Development of Low-Loss in-Fiber Optical Filter at 860 nm,"* joint SBIR with Translume, Inc. which was submitted to NIST on January 17, 2008, (**PI**, Y. Sikorski, Co-PIs, R. Hayrapetyan, **M. Sanders**, and A. Zand).

*"Development of Super Hardened, EMI and Vibration Immune Chemical Biological FTIR Sensor,"* joint STTR with Translume, Inc. which was submitted to US Army on 03/12/2008 (**PI**: Y. Sikorski. Co-PIs: R. Hayrapetyan, **M. Sanders**, and A. Zand).

## **6. Non-funded Grants**

I authored/co-authored a large number of grant proposals. The following is only a selected list of the non-funded grant proposal submission:

\$221,523, Genesee County Recycling Outreach Campaign – RFP #05-029, 2006 (Co-PIs, **M. Sanders** and CBC Recycling, Inc.), 2007.

\$100,000, National Science Foundation – Course Curriculum and Laboratory Improvements Adaptation & Implementation, “*Universal Design in the Manufacturing Environment*,” 2004, (**PI**, T. Lynch, Co-PIs, L. King, **M. Sanders**, and W. Sheng).

\$21,000, Key Foundation – Financial Education, “*Social Security Privatization: Economic Self-sufficiency Program*,” A two three-day financial engineering program, 2005, (**PI**, **M. Sanders**, Co-PIs, P. Gheresus and T. Lin).

\$127,368, National Science Foundation – Assessment of Student Achievement in Undergraduate Education–New Development, “*Development of Course Level Assessment Methodology*,” 2002, (**PI**, Mark Palmer, Co-PIs T. Lynch, and **M. Sanders**).

\$123,205, National Science Foundation – Assessment of Student Achievement in Undergraduate Education – New Development, “*Assessing the Effectiveness of Engineering Education at the Course Level*,” 2001, (**PI**, Mark Palmer, Co-PIs W. Riffe, **M. Sanders**, and W.L. Scheller).

\$211,920, National Science Foundation – Young Scholars Program, “*Manufacturing Engineering: A "Head Start" Program – Computer-Integrated Manufacturing*,” a grant proposal to introduce highly qualified minority, female and other entering eleventh and twelfth grade students to educational and career opportunities in manufacturing. It was structured to provide "hands-on" experience in the use of computerized integration and controlled manufacturing, as well as to teach basic research methods and ethics. A two-year program for 1993-94. (**PI**, **M. Sanders**).

\$49,475, Southeastern Connecticut Private Industry Council, Inc., a School-to-Work Transition Program for Title IIA Job Training Partnership Act, “*A Training Program in Manufacturing Engineering: Computer-Integrated Manufacturing*,” 1992, (**PI**, **M. Sanders**).

\$255,706, National Science Foundation – Young Scholars Program, “*Manufacturing Engineering: A "Head Start" Program – Computer-Aided Manufacturing*,” a grant proposal to introduce highly qualified female and minority junior and senior high school students to career opportunities in automated manufacturing. It was designed to provide "hands-on" experience in computer programming and computer aided manufacturing. A two-year program, 1990-91. (**PI**, **M. Sanders**).

\$49,850, Society of Manufacturing Engineers Education Foundation, “*Capital Equipment, Student Development, and Curriculum Development*,” 1990, (**PI**, **M. Sanders**).

\$37,507, National Science Foundation – Instrumentation and Laboratory Improvement Program, “*A Computer Integrated Manufacturing System in Manufacturing Engineering Education*,” 1990, (**PI**, **M. Sanders**).



\$24,795, Society of Manufacturing Engineers Education Foundation, “*Capital Equipment and Student Development*,” 1987, (PI, M. Sanders).

## RESEARCH EXPERIENCE

2006 – Present, member of a research team working on the research grant, for 2006 – 2007, “*Design and synthesis of novel hydrophilic polyethylene surfaces for wear reduction in artificial joints*,” and 2007 – Present, “*Preparation of Hydrophilic Orthopedic Surfaces*,” funded by McLaren Research Institute. The objective of this research is the preparation and analysis of hydrophilic surfaces on orthopedic grade Ultra High Molecular Weight Polyethylene and to find the amount of wear that may be elicited by a variety of physiological responses. My main responsibilities include the design of the equipment, conducting experimental data, programming robot for performing experiments, and analyzing and interpreting data.

2005 – Present, member of a research team working on the Chemical Agent Fate Research Program, a project funded initially through a \$2.9 million research contract from a federal contracting corporation (Air Force Research Laboratory, Human Effectiveness Directorate, Biosciences and Protection Division, Wright-Patterson AFB, OH, and the US Army's Edgewood Chemical and Biological Center, Aberdeen Proving Ground, MD as a part of the Agent Fate Program). The ultimate objective of this project is to provide the necessary information to war-fighters for predicting the fate of a chemical agent after it is deposited on the ground. I am involved with designing, collecting, and analyzing experimental data, logistic of the project, and managing staff.

2004 – 2007, member of a research team composed of researchers from Kettering University, University of Washington in Seattle and Southern California Edison, Corp. Inc. The purpose of this research project was to characterize the effects of different parameters that can influence the characteristics and performance of a thin planar jet of air (so-called air curtain) emanates from the top of the open refrigerated display cases and is sucked back from the lower part of them. This project was financially supported by the California Energy Commission and DOE. I worked on the experimental design portion of it as well as assisting a Ph.D. student in his dissertation – *Fundamental Study of Different Parameters Affecting Air Curtain Characteristics, and their Effects on the Infiltration Rate of Refrigerated Open Display Cases*.

2004 – 2006, worked on **Refinance-Reinvest-Retire (RRR)** concept considering the new tax laws for dividend tax rate and low interest rates. A grant proposal was submitted in this area.

1993 – 1994, Development of Manufacturing Information Systems using the Information Engineering Methodology (i.e. Planning, Analysis, Design and Generation) and new Techniques to the Development of Engineering Database Management Systems utilizing Information Computer Aided Software Engineering (I-CASE) Technology.

1991, development of a Mathematical Relationship of Tool Wear in the Machining of a High Tech Composite Material with respect to Machining Parameters – i.e. Speed, Feed and Depth of Cut – (received financial incentives).

1982 – 1986, Research Assistant, Texas Tech University, Department of the Industrial Engineering, assisted the Principal Investigators in conducting and analyzing data in various research projects such as energy gradient solar ponds, clean room, and underground water sources. Also, worked closely with the Principal Investigator, in conducting research in manufacturing systems.

## **APPLIED INDUSTRIAL ACTIVITIES**

Visited many companies and the results of these visits, in the past, were receiving donations in equipment and tooling as well as plant tours for students. In recent years, student capstone projects are the outcomes of those visits. Supervised and guided Industrial/Manufacturing Engineering Capstone students to assist local companies (governmental agencies as well) in solving open-ended real world projects. A few of the projects are brought to the University in corporation with the Michigan Manufacturing Technology Center (MMTC) – Genesee Valley, Flint – Genesee Economic Growth Alliance (formerly Manufacturers’ Innovation Council). For those projects a joint proposal was sent to the company prior to the starting of the projects. The following is the list of these projects:

Company Name: **Fernco Inc.**, Davidson, Michigan.  
Date of Project: October 2007 – January 2008. (Fall 2007)  
Number of Project: 1  
Project Description: Analyzing the current process in order to find solutions to improve the as-is operation and the layout. Some of the goals of this project are to standardize operational methods, increase the production volume, minimize floor space needed for components, raw materials, and sub materials, minimize the amount of walking time and distance to fulfill order requirements, and maintain or reduce current manpower. Some of the objectives of the project are to improve 5S implementation and work cell layout, define Shear Ring operation product and process flow, re-evaluate component, raw material, and sub material storage and inventory practices, identify major elements of waste, determine capacity constraints with existing Shear Ring operation work practices, and generate solutions to resolve capacity constraints.

Company Name: **Genesee County**, Flint, Michigan.  
Date of Project: October 2006 – Present (Fall 2006, Fall 2007)  
Number of Project: 4  
Project Description: Designed and produce a video about recycling. A 12-minute educational video covering various process, advantages, and results of recycling is duplicated in 500 DVD to be distributed in various Genesee County events.

Studying the pavement management of the roads which receive federal funds in order to critique the current process for managing the federal-aid network, recommend new network management strategies, compare the

recommended strategies and identify the best strategy, illustrate the future condition of the network if current policies remain in place, illustrate how the recommended strategies will improve the system out to the year 2035, and introduce a scenario that examines the funding required to maintain the entire road network over the study period in order to help in putting the current state of the road network and funding levels in perspective.

The objectives of the Regional Recycling Facility projects are to explore the feasibility of establishing a regional recycling facility within Genesee County, focus on markets and products that are currently underserved in Genesee County and surrounding region. i.e. Industrial, Styrofoam, identify funding sources for construction/implementation of facility and if possible drafting a proposal, identify the optimum organizational structure to own and operate i.e. public/private partnership, non-profit, private, identify end users, identify location, with intermodal attributes i.e. Rail, expressway, interchange, soil type, environmental constraints, and identify number of jobs that could be created.

The goals of the Clean City/County project are to explore the possibility of becoming designated as a Clean City/County, analyze the benefits/positives and/or cost/negatives, suggest Committee Structure would be necessary, and sort out stockholders in the current process.

Company Name: **Crystal Filtration Co.**, Rochester Hills, Michigan.  
Date of Project: January 2006 – April 2006. (Winter 2006)  
Number of Project: 1  
Project Description: Analyzing the current method of material tracking and inventory – creating an incoming/outgoing audit function and maximizing floor space in order to keep better records of the Company’s daily inventory. Also, investigation of different types of software, both MAC and PC based which could help the Rochester warehouse and Detroit manufacturing plant to communicate and maintain a real time inventory.

Company Name: **C.B.C. Recycling, Inc.**, Flint, Michigan.  
Date of Project: July 2005 – December 2005. (Fall 2006)  
Number of Project: 1  
Project Description: Studying the existing and potential expansion of the company’s plant layout, facility design, and process design. Also, selection of equipment, studying safety issues, and estimated cost and its justification for implementation of electronic vision and full/partial automation of the process are parts of this work. (MMTC was involved with this project.)

Company Name: **Simco LTD**, Lapeer, Michigan.  
Date of Project: January 2005 – April 2005. (Winter 2005)  
Number of Project: 1

Project Description: Identifying improvement opportunities via value stream mapping and introducing automation to its assembly line as well as cost justification of it.

Company Name: **Android Industries**, Genesee, L.L.C. (AI – Genesee), Flint, Michigan.  
Date of Project: October 2003 – Present. (Winter 2006, Fall 2004, Spring 2004, Fall 2003)  
Number of Project: 4  
Project Description: Analyzing the Spring Cell for improvements in safety for the operators without reducing throughput or productivity. Insuring compliance to MIOSHA, quality level maintained, and limitation on implementation costs, investigated End Effector design, Cell layout, Standardize Work (process), and Error Proofing.

Investigating Front Axle Assembly Line and providing the Company with recommendations on inventory, layout, and value stream mapping for the line. Justification of the recommendations via simulation was provided.

Identifying inefficiencies of Hilo routing (observations and work sampling studies), preparing manual for the Hilo drivers (process improvements in the reduction of Hilo inefficiencies operations), and analyzing various transportation methods within the front axle line. Justification of the recommendations via simulation was provided.

Studying methods of improving offline brake kiting assembly, ergonomics issues with a particular station, and cost effectiveness of conveyor verses carts and redesigning work layout to increase work utilization. Justification of the recommendations via simulation was provided.

Company Name: **General Motors Service Parts and Operations (GM SPO)**, Flint, Michigan.  
Date of Project: October 2002 – January 2003. (Fall 2002)  
Number of Project: 2  
Project Description: Providing the Company with a pick-path for its inventory, layout for distributable and non-distributable parts, as well as a layout for incorporated part commodity codes.

Cost analysis of maintaining vs. replacing the existing ELPO/Flocoat Systems.

Company Name: **Mercedes Finest Specialty Foods, Inc.**, Mt. Morris, Michigan.  
Date of Project: July 2002 – October 2002. (Summer 2002)  
Number of Project: 1  
Project Description: Providing the Company with plant layout, facility design, process design, and information that would help them in establishing process activities to their bakery operations. The investigation was extended to study on internal quality control. (MMTC was involved with this project.)

Company Name: **Atlas Technologies**, Fenton, Michigan.  
Date of Project: January 2002 – April 2002. (Winter 2002)  
Number of Project: 1  
Project Description: Assessing the market for selling Atlas manufacturing automation products to appliance and HVAC manufacturers in Europe. Assessing the market size, the competitors within the market, and the barriers to market entry. Also, assessing the NAFTA market to determine the potential for selling new industrial products.

Company Name: **Ring Screw Textron: Fenton Heading**—Textron Fastening Systems, Fenton, Michigan.  
Date of Project: July 2001 – December 2001. (Summer 2001, Fall 2001)  
Number of Project: 2  
Project Description: Conducting studies in Business Process Design (value stream mapping, process performance measurement, process analysis and improvement, and process improvement strategies.) (MMTC was involved with this project.)

Studying the Company's Preventive Maintenance and Inventory Control programs. Studying quality/reliability concepts (SPC chart interpretation, product acceptance and sampling plan, process capability and tolerance measurement.)

Recommendations, based on cost analysis and observations, to improve the business were presented.

Company Name: **Landaal Packaging Systems**—Bristol Road plant, Flint, Michigan.  
Date of Project: January 2001 – April 2001. (Winter 2001)  
Number of Project: 1  
Project Description: Improving and efficiently designing the company's product lines to lean their product activities.

Provided the company with information and unbiased recommendations as well as options for implementation of process improvements on foam bag lines, shrink wrap processes, fork truck operations, and inventories. (MMTC was involved with this project.)

## **DISSERTATION, THESES, AND PROJECT ADVISED/SUPERVISED**

In addition to advising a large number of graduate, independent students, teaching and research assistants, was chair/member of the committees for the following graduate and undergraduate students in their dissertation, theses, or projects:

Doctoral's Dissertation, "*Long-Term Consequences of Selected Competitive Strategies During Deregulation of the U.S. Electric Utility Industry: System Dynamics Modeling and Simulation,*"

Dr. Yehia F. Khalil, 1997. (Committee member.)

Master's Thesis, "*Evaporation Modeling of Sessile Drops*," Mike McElroy, 2008. In process. (Committee member).

Master's Research Project, "*Improving Inventory Process and Policy in a Biscuit Company*," Erez Osishkin, 1997. (Chair)

Master's Research Project, "*Effect of Surface Temper Etch on Metal Removal for SAE 9310 and Alloy 53 Steels*," Thomas Slauta, 1995. (Chair)

Master's Thesis, "*Manufacturing Information Systems Management Using I-CASE Technology and Information Engineering*," James E. Yunan, 1994. (Chair)

Master's Research Project, "*The Effect of Machining Parameters on the Amount of Tool Wear for Machining Composite Materials*," Satish Mysore, 1992. (Chair)

Master's Research Project, "*Robot Video Training Program-Characteristics and Programming*," Jaroondech Janjarussakul, 1991. (Chair)

BSIE Thesis, "*Development and Implementation of a Prototype Tracking System at ZF Lemforder F-Lapeer*," ZF Lemforder (F-Lapeer), Lapeer, MI, Timothy Greenlees, in process.

BSIE Thesis, "*Utilizing Lean Theory and Techniques to Reduce Waste and Justify Physical Integration of DBO Value Stream*," PPG Industries Inc., Troy, MI, Nicholas Latiano, in process.

BSIE Thesis, "*Material Handler and Molding Track and Trace TM Job Analysis and Design*," Delta Systems, Streetsboro, OH, Marcus Ritosa, in process.

BSIE Thesis, "*Development and Implementation of Solutions for Meeting Hours per Vehicle Industry Benchmarks*," Chrysler – Headquarters, Auburn Hills, MI, Tamiem Morsi, in process.

BSIE Thesis, "*Implementation of Inventory Bar Coding Data Collection System*," De-Sta-Co, Auburn Hills, MI, Jonathan Dunham, in process.

BSIE Thesis, "*The Time Value of Money: no longer has value*," Kettering University – Academic Thesis, Kyle Scott, in process.

BSIE Thesis, "*Cylinder Head Broach Loading Alternatives and Implementation*," General Motors, Flint, MI, Joshua D. Binkley, in final stage.

BSME Thesis, "*Combination of Installation and Construction to Form a Held Order Team*," Ameritech, Hoffman Estates, IL, Travis H. Whitener, in final stage.

BSME Thesis, "*GMX 211/31 Seat Structure: Manufacturing Process Optimization of Automotive Seating Mechanisms*," Fisher & Company Inc., St. Clair Shores, MI, Matthew Dodd, July 2008.

BSIE Thesis, *“The Design, Redesign, and Implementation of the State Farm Identification Card,”* Data Manufacturing, Inc. Chesterfield, MO, Lindsay R. Behnen, January 2008.

BSME Thesis, *“The Process of Building Specialty Machines,”* Trio Tool Company, Livonia, MI, Eric Uram, December 2006.

BSME Thesis, *“Improving the Deburr Process in Machining,”* Dura Automotive Systems, Inc., Fremont, MI, Mike McElroy, September 2006.

BSME Thesis, *“Improving the Profitability of Ranger Transfer – the True Cost of Outsourcing,”* Robert Bosch Corporation, St. Joseph, MI, Jordan R. Klint, September 2005.

BSIE Thesis, *“Total Cost Optimization Tool to Analyze Material Dolly Delivery Alternatives,”* General Motors, Warren, MI, Stephanie I. Cole, September 2005.

BSME Thesis, *“Standardize Upgrade Process for Vehicle Instrument Clusters,”* Simco LTD, Lapeer, MI, Jeremy M. Frenznick, August 2005.

BSME Thesis, *“Identify and Implement Cost Reduction System Using Pareto Analysis to Reflect Savings of 10% of Annual Tooling Budget,”* PSMI Corporation, Ann Arbor, MI, Brian E. Olatunji, July 2005.

BSIE Thesis, *“Hilo Driver Training Manual,”* Android Industries, Genesee, LLC, Flint, MI, Rachel L. Thole, May 2005.

BSIE Thesis, *“Transition to the Team Leader Concept to Support Global Manufacturing Systems at a Brownfield Site,”* General Motors, Flint, MI, Lindsey L. Marquedant, January 2005.

BSME Thesis, *“Loader 24 Design Improvement,”* UPS, Hodgkins, IL, Robert M. Butler, January 2005.

BSCE Thesis, *“Reduction of Bad Bypass for the Toledo Hub Twilight Sort of the Metro Detroit for UPS to Reduce Costs While Improving Operational Efficiency and Accuracy,”* UPS, Livonia, MI, Rashida L. Ferguson, November 2004.

BSME Thesis, *“Improvement of Transmission Assembly Process,”* Android Industries, Genesee, LLC, Flint, MI, James W. Davis, June 2004.

BSME, *“Implementation of Cost Reduction, Lean Manufacturing, and Flexible Tooling Strategies for Low Volume Manufacturing in a High Volume Environment,”* Visteon Corporation, Dearborn, MI, Benjamin J. Wojdyla, April 2004.

BSIE Thesis, *“Implementation of a Revised United Parcel Service Loop to Improve Dispatch in the Toledo North Center,”* UPS, Livonia, MI, Michelle A. Magat, September 2003.

BSIE Thesis, "*Implementation of the Relooping Process to Improve Dispatching at the UPS Jackson Center*," UPS, Livonia, MI, Michelle Doerr, September 2003.

BSIE Thesis, "*Process to Distribution: Leveling the Flow*," General Motors, Grand Blanc, MI, Daniel J. Davidson, July 2003.

BSIE Thesis, "*Evaluation of Alternative Manufacturing Sites for Future or Current Pyxis Products*," Cardinal Health Inc., San Diego, CA, Bryce C. Moller, January 2003.

BMG Thesis, "*Improvement of the Layout/Output/Products of Current Co-op Employer Through Proposed State-of-the-art Facility*," Z-Tard, Flint, MI, Ryan E. Salajekeh, January 2003.

BAM/BSIE Thesis, "*A System for Improving the Quoting Process*," Jabil Circuit, Inc., Auburn Hills, MI, Paul D. Young, December 2002.

BSIE Thesis, "*GM Powertrain Productivity Planning and Management Process*," General Motors, Pontiac, MI, Michael J. Clem, November 2002.

BSIE Thesis, "*Grand Rapids Facility Driver Dispatch*," UPS, Grand Rapids, MI, Amanda J. Ulberg, November 2002.

BMfGE Thesis, "*In-Line-Vehicle-Sequencing*," Ford Motor Company, Wayne, MI, Syed Ahmed Rehmathullah, August 2002.

BSIE Thesis, "*Install Vision System in Cell #2 (Climate Control Panels)*," Lear Corporation, Plastics Mendon, MI, Brian J. Kowalski, November 2001.

BSIE Thesis, "*Material Handling Improvement for Lear Detroit Plant*," Lear Corporation, Southfield, MI, Ruth R. Hojnacki, September 2001.

BSME Thesis, "*Finished Machining Processes on Joint Face Surfaces*," General Motors, Dean C. Thelen, December 2000.

BSIE Thesis, "*Training Methods for Loading and Unloading of a United Parcel Service Deck II Trailer*," UPS, Grand Rapids, MI, Emily K. Harder, November 2000.

A joint project, "*Milling Operation Video Training Program Utilizing a CNC Bridgeport Milling Machine-Characteristics and Programming*," Thomas M. Juul and Amir Adler, 1994.

Senior Project, "*Utilizing a CNC Training Lathe for Machining Application, Software, and Tools*," Mark Cavallaro, 1990.

Senior Project, "*CNC Machining Application, Software, and Tools Using a CNC Training Lathe*," Joseph M. Follo, 1990.



Independent Project, "A Study in Advanced Database System–Tools in the Design Process and Network DBMS," S. Muneer Reza, 1988.

## **CURRICULAR ACTIVITIES**

Development (or major revision of) the following courses:

- Two overview graduate courses covering Industrial Engineering concepts for non-Industrial Engineering students (with D. Clark), 2007-2008.
- Advanced Engineering and Managerial Economics, 2004-2005.
- Systems Management I: Engineering Cost Analysis, 2000 – 2001.
- Systems Management II: Project Planning, Scheduling, & Management, 2000 – 2001.
- Systems Design I: Production Systems Design, 2000 – 2001.
- Systems Design II: Integrated Production Systems Design, 2000 – 2001.
- Systems Design III: Lean Systems Design & Implementation, 2000 – 2001.
- Industrial Engineering Concepts (for non-IE majors), 2000 – 2001.
- Reliability and Maintainability, 1992 – 1993.
- Quality Assurance, 1992 – 1993.
- Internship, 1992 – 1993.
- Computer – Aided Manufacturing, 1988 – 1989.
- Robotics in Manufacturing, 1988 – 1989.

Supported and involved with continuing education activities. Developed/initiated three continuing education/short courses – Activity Based-Costing/Quoting, Economics for Engineers, and Project Management. The outlines and short description versions of these courses are at the Kettering Corporate Connection's (KCC) catalog. Developed Activity Based-Costing/Quoting in ready to be delivered condition and delivered a two-hour talk to Delphi on the Economics for Engineers (2003) short course. Co-developed Lean Manufacturing Systems: Process & Methods and Structured Problem Solving courses and co-delivered to ArvinMeritor in 2007.

Initiated Enterprise Systems Concentration in the Industrial Engineering program, 2000.

Initiated and designed the initial stages for the Manufacturing Processes E–course, 1998 – 1999.

Developed and administrated various pre–college programs, publicized the University's activities throughout the United States, and brought parents, students, and others to the campus. To name a few:

Pre–engineering and science program geared to eight, ninth, and tenth graders of New Haven and West Haven public schools under the auspices of the Department of Higher Education, 1997.

Pre–engineering program geared to eleventh and twelfth graders under the auspices of the National Science Foundation, 1995.

Pre-engineering program geared to seventh, eighth, ninth, and tenth graders under the auspices of the GTE Foundation and Connecticut Pre-Engineering Program, Inc., 1995.

Industrial/Manufacturing engineering program geared to eleventh and twelfth graders under the auspices of the National Science Foundation, 1993.

Revised the Industrial Engineering Program by incorporating four different concentrations, 1993 – 1994.

Worked on the preliminaries for introducing the Master of Science in Industrial Engineering at Sonalysts, Inc. in Waterford, Connecticut, 1989.

Developed the Manufacturing Systems Option in the Industrial Engineering Program, 1988. In this regard a paper was written. (Please see Publications and Presentations.)

Developed and administrated the Manufacturing Laboratory (1986 – 1998). Principal person in charge of equipment and vendor selections. Some of the major items which actively involved in negotiating and arranging the purchases of them were a Bridgeport CNC milling machine, a Southbend Desk-Top Lathe machine (under the Society of Manufacturing Engineers Education Foundation grant, 1988 – 1989) and a S100 GMFanuc robot and its components.

Revised, modified, introduced computer applications, laboratory components and projects, and/or updated the lectures for a number of graduate and undergraduate courses such as Manufacturing Processes, Manufacturing Analysis, Engineering Economics, Cost Control, Design and Analysis of Experiments, and Production Control.

## **OTHER PROFESSIONAL ACTIVITIES AND SERVICES**

July 2005 – Present, appointed by the Genesee County Board of Commissioners for a three-year term (reappointed for another three years in January 2008) to serve on the Genesee County Solid Waste Implementation Committee.

2005 – 2007, as one of the five Kettering team members worked with the **Genesee Intermediate School District** (and its participating constituent school districts) on the federally funded Mathematics and Science Partnership (MSP) program. Assisted **GISD** in designing Lesson Study.

2004 – 2007, as a team member worked on interdepartmental and integrated capstone projects, a few papers and a grant proposal were submitted.

March 2006, 12<sup>th</sup> International Conference on Industry, Engineering, and Management Systems, served as a session chair — Education and Training Division, Cocoa Beach, FL, March 2006.

Summers of 1995 and 1993, National Science Foundation, served as a panelist to evaluate proposals submitted to the Young Scholars Program under the division of Elementary, Secondary, and Informal Education.

October 1998 – December 1998, University of Bridgeport (UB), School of Education and Human Resources, Bridgeport, Connecticut. Consulted in curricula and programs development, assisted in finding external funding sources, and wrote a grant proposal. As a result, the Connecticut Department of Higher Education awarded the University a \$375,000 grant, for a three-year period, to establish a science/engineering-oriented program, “*ConnCAP at UB*,” for seventh through twelfth grade students in the Bridgeport area. Furthermore, in academic year 2001 – 2002, I reviewed and assisted in writing a grant proposal in engineering education. With some minor modifications, UB sent the proposal to three different funding organizations. Each of the funding organizations provided partial support.

Participated in various local and national conferences, professional seminars, short courses, and workshops. To name a few:

- Activity Based–Quoting Seminar, 2001.
- Virtual Factory Seminar, 2000.
- A five–day workshop on principles and applications of Computer–Integrated Manufacturing system, 1989.
- A two–day course on programming and operating a Bridgeport CNC milling machine, 1991.
- A five–day course on programming and operating a CNC Desk–Top Lathe, 1990.
- A three–day course on principles and applications of Flexible Manufacturing System, 1988.
- A seven–day management workshop, 1983.
- Seminar in Industrial Professional Technology, 1981.
- Several seminar in Industrial Engineering topics (Manufacturing Systems, Numerical Control), 1982 – 1985.
- IIE National conferences
- ASEE conferences

Senior member, Institute of Industrial Engineers (IIE). IIE Faculty Advisor, September 1986 – September 1993, September 1995 – September 1997, and March 2000 – July 2001.

Member of Society of Manufacturing Engineers (SME) and Robotics International of SME, 1982 – 1986.

September 1992 – Present, I have been involved with improving and increasing the level of math and science competency among the youths. The following is a selected list of related activities:

At the University of New Haven, I planed and conducted special programs and organized major events such as:

- Tests of Engineering Aptitude, Mathematics and Science (TEAMS)
- National Engineering Design Challenge (NEDC)
- Science Fair, CPEP

At Kettering University, I worked with different offices and organizations such as:

- FIRST Robotics, as a faculty advisor, I attended the national conference, held in Manchester, NH, January 2001 and judged the competition held at Kettering in September 2000.
- Office of Minority Student Affairs–Pre–College Programs, I played a significant role in writing various grants for pre-college programs. Several grants were awarded and I played a major role in executing them from establishing and running, to submitting final reports. For example:
  - Provided assistance in initiating and establishing the Flint Community Schools 21<sup>st</sup> Century Community Learning Centers Initiative at Kettering University. I assisted in negotiation of the partnership agreement between Kettering University and the Office of Community Partnerships and Educational Outreach of Flint Community Schools. In addition to teaching the computer/mathematics component of the program, assisted in developing curricula and in securing the necessary funds for offering the program to the Flint middle schools students for four consecutive terms.
  - Played similar role as above on an academic enrichment program – MAP (Making Academics Priority).
  - Contributed in executing the Kettering University's Tech 2000, Spectrum, and Science in the City programs.
  - Office of Student Affairs–Women’s Resource Center, contributed to 21<sup>st</sup> Century Women and Kamp Kettering programs.

## **UNIVERSITY AND DEPARTMENTAL COMMITTEES**

In addition to serving on numerous Ad Hoc committees and various task forces, I have served on the following departmental and university wide committees:

Academic year 2008 – 2009

Chair, University Tenure and Promotion Committee  
Chair, Tenure, Promotion, and Ethics Committee  
Chair, IME Tenure and Promotion Committee  
Chair, IME Department Head Search Committee  
Member, IME Assessment Committee

Academic year 2007 – 2008

Chair, IME Tenure and Promotion Committee  
Member, University Tenure and Promotion Committee  
Member, IME Assessment Committee  
Member, Academic Computing Committee

Academic year 2006 – 2007

Member, IME Assessment Committee  
Member, Academic Development, Ethics, Promotion, and Tenure  
Member, Academic Computing Committee

Academic year 2005 – 2006

Member, IME Assessment Committee  
Member, Academic Development, Ethics, Promotion, and Tenure  
Member, Research Counsel  
Vice Chair, IME Department Promotion Committee  
Member, Academic Computing Committee

Academic year 2004 – 2005

Member, IME Assessment Committee  
Member, Academic Development, Ethics, Promotion, and Tenure  
Member, Research Counsel

Academic year 2003 – 2004

Co-Chair, IME Assessment Committee  
Member, University Assessment Committee  
Secretary, Faculty Senate  
Member, Academic Development, Ethics, Promotion, and Tenure  
Member, Kettering University Council Committee

Academic year 2002 – 2003

Leader, ABET EC 2000 Assessment, IE Program  
Member, Kettering University Council Committee  
Secretary, Faculty Senate  
Member, Academic Development, Ethics, Promotion, and Tenure  
Member, University Board of Student Conduct Committee

Academic year 2001 – 2002

Leader, ABET EC 2000 Assessment, IE Program  
Member, Executive Council Committee  
Secretary, Faculty Senate  
Member, Academic Development, Ethics, Promotion, and Tenure (1/2 of the year)

Academic year 2000 – 2001

Member, Executive Council Committee  
Secretary, Faculty Senate  
Member, IE Faculty Search Committee

Academic year 1999 – 2000

Senator, Faculty Senate

Academic year 1997 – 1998:

- Chair, Environmental Committee
- Member, University General Grievance Committee
- Member, Health Care Management Symposium Committee
- Member, University Facilities Management Committee

Academic year 1996 – 1997:

- Member, University General Grievance Committee
- Member, Health Care Management Symposium Committee
- Member, University Facilities Management Committee

Academic year 1995 – 1996:

- Member, School of Engineering Recruitment and Retention Committee
- Member, University Space Committee
- Member, University General Grievance Committee

Academic year 1994 – 1995:

- Member, University Audio Visual Committee
- Member, Planning Committee for organizing the tenth in series of Symposia at the University of New Haven on Ethics in the Workplace, "Ethical Issues for the Engineering Profession."

Academic year 1993 – 1994:

- Member, Outstanding Teacher Award Committee

Academic year 1992 – 1993:

- Member, University Core Curriculum Committee
- Member, School of Engineering Space Committee
- Member, ABET Report Preparation Committee, IE Department
- Senator, Faculty Senate
- Member, School of Engineering Computer Committee
- Member, Entry–Level Engineering Program (ELEP), Departmental Advisor

Academic year 1991 – 1992:

- Senator, Faculty Senate
- Member, School of Engineering Curriculum Committee
- Member, Academic Standards Committee
- Member, Senate Curriculum Committee
- Member, Library Committee
- Secretary, University Core Curriculum Committee
- Member, Professional Development Committee
- Member, Budget and Development Committee
- Yearbook Editor and Member, Meeting Planning Committee, American Society For Engineering Education.

Academic year 1990 – 1991:

Senator, Faculty Senate  
Member, School of Engineering Computer Committee  
Member, Professional Development Committee  
Member, Budget and Development Committee

Academic year 1989 – 1990:

Member, ABET Report Preparation Committee, IE/CS Department  
Member, Professional Development Committee  
Member, Budget and Development Committee  
Member, Faculty Search Committee, IE/CS Department  
Member, Search Committee for two Admission Counselors

Academic year 1988 – 1989:

Member, Faculty–Student Relations Committee

Academic year 1987 – 1988:

Member, Faculty–Student Relations Committee

## REFERENCES

Please contact them if you are seriously considering my application.

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