Report of Research and Scholarly Activities

Spring 2004 – Spring 2005

Industrial and Systems Engineering
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Department of Industrial and Systems Engineering
Samuel Ginn College of Engineering
Auburn University

- Offers four degrees – B.I.S.E., M.I.S.E., M.S. and Ph.D.
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- More than $2 million annual research expenditures with sponsorship from National Science Foundation, Sandia National Laboratories, Center for Disease Control/National Institute of Occupational Safety and Health, U.S. Navy, U.S. Department of Agriculture, NASA and many corporations
- High achieving alumni including current or past:
  - CEO, Accenture
  - CEO, Gulf Power
  - CEO, Southern Nuclear
  - CEO, Pacific Bell
  - President, Honeywell Sensing & Control
  - CFO, Mirant Corp.
  - COO, Apple Computer
  - VP and CIO, Verizon
  - VP, Northrup-Grumman
  - Director, U.S. Army Aviation & Missile Command
  - Director of Safety, Johnson & Johnson

For more information visit www.eng.auburn.edu/ise
 Faculty Background, Affiliations and Honors

J T. Black, Professor Emeritus, Ph.D., P.E.

Ph.D., University of Illinois-Urbana, 1969

Research in materials processing/metal cutting theory and practice, manufacturing systems design and engineering, and linked-cell manufacturing systems.

- Accreditation Board for Engineering and Technology (ABET): Reviewer for Manufacturing Education
- Alpha Pi Mu (Industrial Engineering Honor Society): Member
- American Society of Mechanical Engineers (ASME): Fellow
- Institute of Industrial Engineers (IIE): Fellow
- Journal of Manufacturing Processes: Editor-in-Chief
- Journal of Manufacturing Systems: Editor-in-Chief
- North American Manufacturing Research Institute of SME: Member
- Sigma Xi, National Research Honor Society: Member
- Society for Integrated Manufacturing: Member
- Society of Manufacturing Engineers (SME): CASA Member and Fellow
- Society of Manufacturing Engineers (SME): Member of the Educational Foundation Board of Directors
- Texas Higher Education Board: Reviewer for Proposals and Programs

Robert “Bob” L. Bulfin, Technology Management Professor, Ph.D.

Ph.D., Georgia Institute of Technology, 1975

Research in developing solution techniques that can be applied to real-world problems. The work has consisted of defining problems, developing models, and determining solution procedures for these models. Some specific applications include allocating fuels in copper production, determining the best use of safety funds, and scheduling in a variety of situations.

- Alpha Pi Mu (Industrial Engineering Honor Society): Member
- Computers & Operations Research: Associate Editor
- Institute of Industrial Engineers (IIE): Senior Member
- Institute for Operations Research and Management Science (INFORMS): Member
Gerard “Jerry” A. Davis, Assistant Professor, Ph.D., C.P.E., C.S.P.

Ph.D., Auburn University, 2001

Research in occupational safety and ergonomics, manpower, staffing and productivity issues associated with the labor force.

- American Society of Safety Engineers (ASSE): Professional Member
- American Society of Safety Engineers (ASSE), Academics Practice Specialty: Member
- American Society of Safety Engineers (ASSE), Engineering Practice Specialty: Member
- Applied Ergonomics Conference Programming Committee: Member (appointed by SWS/AEC/IIE)
- Board of Certified Professional Ergonomics (CPE): Member
- Board of Certified Safety Professionals (CSP): Member
- Human Factors and Ergonomics Society (HFES), Education Technical Group (ETG): Member
- Human Factors and Ergonomics Society (HFES), Safety Technical Group (STG): Member
- Institute of Industrial Engineers (IIE): Senior Member
- Institute of Industrial Engineers, Society for Work Science (SWS): President-Elect and National President (4/1/05-present)
- Outstanding Faculty Member, Auburn University, Graduate School. Selected by the Student Government Association (2004-2005).

John L. Evans, Associate Professor, Ph.D.

Ph.D., University of Alabama, Huntsville, 1991

Research in investigating next generation electronics packaging and manufacturing technologies needed for the advancement of the electronics industry, and developing an automotive engineering education program for the expanding southeastern U.S. manufacturing base.

- Institute of Electrical and Electronics Engineers (IEEE): Member
- Institute of Industrial Engineers: Member
- Society of Automotive Engineers (SAE): Member
- Society of Automotive Engineers (SAE) World Congress 2005, Automotive Electronics Packaging: Session Chair
- Surface Mount Technology Association (SMTA): Senior Member
- Surface Mount Technology Association (SMTA): Technical Committee, 2001-present
- Surface Mount Technology Association (SMTA) International, Harsh Environment Reliability Track: Track Chair, 2004
- Surface Mount Technology Association (SMTA), Harsh Environments Electronics Conference: General Chair, 2004
Kevin R. Gue, Associate Professor, Ph.D.

Ph.D., Georgia Institute of Technology, 1995

Research in logistics modeling and optimization, including distribution, transportation, warehousing, and material handling.

- College-Industry Council on Material Handling Education: Vice President
- Institute of Industrial Engineers (IIE): Senior Member
- Institute for Operations Research and Management Science (INFORMS): Member
- Institute for Operations Research and Management Science (INFORMS), Warehousing and Distribution, Denver, Colo.: Session Chair, November 2004

Emmett J. Lodree, Assistant Professor, Ph.D.

Ph.D., University of Missouri-Columbia, 2001

Research in operations research, production and inventory control theory, reliability and maintenance, scheduling theory, and transportation logistics.

- Industrial Engineering Research Conference: Invited Session Organizer and Chair, May 2005
- Institute for Operations Research and Management Science (INFORMS): Member
- Institute of Industrial Engineers (IIE): Member
- American Society for Engineering Education (ASEE): Professional Member
- National Science Foundation, Manufacturing Enterprise Systems: Panel Written Reviews, June 2004

Saeed Maghsoodloo, Professor, Ph.D., P.E.

Ph.D., Auburn University, 1968

Research in statistical quality control, Taguchi methods, and multivariate analysis.

- American Society for Quality Control (ASQC): Member
- Institute of Industrial Engineers (IIE): Member
- Institute of Industrial Engineers (IIE), Editorial Board of Quality and Reliability Engineering: Member
- IIE Transactions: Associate Editor
- Journal of Manufacturing Systems: Associate Editor
Chan S. Park, Ginn Distinguished Professor, Ph.D., P.E.

Ph.D., Georgia Institute of Technology, 1977

Research in pricing transmission congestions (power economics and energy modeling), real options (strategic investment decisions under uncertainty), and financial engineering.

- Institute of Electrical and Electronics Engineers (IEEE): Member
- Institute of Industrial Engineers (IIE): Fellow
- Institute of Industrial Engineers (IIE), The Wellington Award Committee, Engineering Economy Division: Member
- National Science Foundation (NSF): Panel Reviews
- The Engineering Economist: Editor Emeritus

Lewis N. Payton, Assistant Research Professor, Ph.D.

Ph.D., Auburn University, 2002

Research in DFMA (Design for Manufacture and Assembly), Toyota production controls, friction stir welding, lead free solders, deformation of materials, tribology, metal cutting theory, casting, advanced manufacturing methods, biomechanics and ergonomics, biomechanics and the ageing work force.

- Alpha Pi Mu (Industrial Engineering Honor Society): Member
- American Society for Engineering Education (ASEE): Member
- American Society of Safety Engineers (ASSE): Member
- Human Factors and Ergonomics Society (HFES): Member
- Institute of Industrial Engineers (IIE): Member
- Sigma Pi Sigma (National Physics Honorary Society): Member
- Society of Manufacturing Engineers (SME): Member
- The Materials Society: Member
- The Welding Society: Member

Lu Ann Sims, Instructor and Academic Advisor, M.S.

M.S., Georgia Institute of Technology, 1978

- Institute of Industrial Engineers (IIE): Senior Member and Chapter Advisor (2005)
Alice E. Smith, Professor and Chair, Ph.D., P.E.

Ph.D., University of Missouri-Rolla, 1991

Research in the modeling and optimization of complex systems with emphasis on methods inspired by nature.

- American Society for Engineering Education (ASEE): Member
- American Society for Engineering Education (ASEE): Zone II Best Paper Award
- *Computers & Operations Research*: Associate Editor, 2005-present
- Congress on Evolutionary Computation (CEC2005), Program Committee: Member, 2005
- Institute of Electrical and Electronics Engineers (IEEE): Senior Member
- Institute of Electrical and Electronics Engineers (IEEE), *Transactions on Evolutionary Computation*: Associate Editor, 1998-present
- Institute of Industrial Engineers (IIE): Fellow
- Institute of Industrial Engineers (IIE): Educational Foundation: Member 2002-2005
- Institute of Industrial Engineers (IIE): New Faculty Colloquium Speaker, Atlanta, May 2005
- *IIE Transactions*, Design and Manufacturing Editorial Board: Member, 1996-present
- Institute for Operations Research and Management Science (INFORMS): Member
- Institute for Operations Research and Management Science (INFORMS), *Journal on Computing*: Associate Editor, 1995-present
- Society of Women Engineers (SWE): Senior Member
- Society of Women Engineers (SWE), Regional Conference Workshop: Leader and Speaker, March 2005

Jeffrey “Jeff” S. Smith, Professor, Ph.D.

Ph.D., Penn State University, 1992

Research in discrete event simulation and manufacturing systems design and analysis.

- Winter Simulation Conference, Washington, D.C.: General Chair, 2004
- Institute of Industrial Engineers (IIE): Senior Member
- Institute for Operations Research and Management Science (INFORMS): Member
- National Science and Engineering Research Council (Canada): Written Reviews
  - *Simulation Modeling and Analysis* (book review): Written Reviews
Robert “Rob” E. Thomas, Professor, Ph.D., P.E., C.P.E.
Ph.D., Texas A&M University, 1988
Research in general occupational safety and ergonomics, occupational biomechanics, human factors engineering, workplace and work area design.
- Alabama Academy of Science (AAS): Member
- American Industrial Hygiene Association (AIHA): Senior Member
- American Industrial Hygiene Association (AIHA), Ergonomics Committee: Elected Member of the Special Steering Group
- American Society for Engineering Education (ASEE): Member
- American Society of Safety Engineers (ASSE): Member
- Institute of Industrial Engineers (IIE): Senior Member

Jorge F. Valenzuela, Associate Professor, Ph.D.
Ph.D., University of Pittsburgh, 2000
Research in stochastic modeling and optimization, both theory and applications. Recent research involves stochastic models for the evaluation of production costs and optimization of electric power generation.
- Institute of Electronic and Electrical Engineers (IEEE): Member
- Institute of Industrial Engineers (IIE): Member
- Institute for Operations Research and Management Science (INFORMS): Member
- Institute for Operations Research and Management Science (INFORMS): Publicity Chair, 2005
- Institute for Operations Research and Management Science (INFORMS), ENRE division, Student Travel Scholarship Competition: Judge, 2004
- Institute for Operations Research and Management Science (INFORMS), Section on Energy, Natural Resources and the Environment: Vice-chair (Chair elect), 2005-2006
- National Science Foundation (NSF): Panel Member
- Probabilistic Methods Applied to Power Systems (PMAPS), 8th International Conference on PMAPS, Ames, Iowa: Session Chair, 2004
- Winter Simulation Conference: Publication Chair, 2004
IN MEMORIAM

Brian J. Carnahan, Associate Professor, Ph.D. (1966-2005)

Dr. Carnahan was born February 18, 1966 in McKeesport, Pa., the second of three sons born to David and MaryJane Carnahan. At the time of his death on February 22, 2005, he was married to the former Ms. Paula Rendulic, also of McKeesport, and is the father of three children, daughter Megan Jean and identical twin boys William David and Nathaniel James.

Dr. Carnahan was a 1984 honors graduate of Elizabeth Forward High School in Elizabeth, Pa. He went on to undergraduate work at Penn State University, graduating in 1988 with a bachelor’s degree with honors. While attending the university, he was a member of Sigma Phi Fraternity and received his first technical publishing honors as an undergraduate student.

In fall 1988 he was accepted into the graduate studies program at the University of Massachusetts, from which he graduated in spring 1991 with a master’s degree in industrial engineering and operations research with an emphasis on ergonomics.

Upon graduation he accepted a position as an industrial engineer and ergonomist with the U.S. Department of Labor in Washington, D.C. He left the Department of Labor in 1995 to pursue a doctorate in industrial engineering at the University of Pittsburgh.

Dr. Carnahan accepted a faculty appointment in the Department of Industrial and Systems Engineering at Auburn University in 1999. In 2005, he was granted tenure and promoted to associate professor.
ARCHIVAL SCHOLARLY PUBLICATIONS

Books and Book Chapters


Journal Articles


**Bold type** denotes faculty of the Department of Industrial and Systems Engineering at Auburn University


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**Bold type** denotes faculty of the Department of Industrial and Systems Engineering at Auburn University.
Sponsored Research Projects

ACIPCO
Payton, L.N. “Material Indices.” ACIPCO: $20,000. Year: To Be Determined.

Auburn Engineers, Inc.

Auburn University

Caterpillar
Payton, L.N. “Grey Iron Casting II.” Caterpillar: $10,000. Year: To Be Determined.
Payton, L.N. “Machining Grey Ductile Iron.” Caterpillar: $100,000. Year: To Be Determined.

Center for Pharmacy Operation and Design (CPOD)


Diversified Systems

Gul Technologies

Intermet Corporation of Columbus
**KCE American Inc.**

**Nanya Corporation**

**National Aeronautics and Space Administration (NASA)**

**National Institute for Occupational Safety and Health (NIOSH)**


**National Science Foundation (NSF)**


**National Space Science and Technology Center (NSSTC)**

Office of Naval Research

Philips Equipment

Sandia National Labs

Siemens

Southern Consortium for Injury Biomechanics

United States Department of Agriculture (USDA)

United States Tennis Association (USTA)

Wal-Mart Distribution Center
**Graduate Student Degrees**

**Ph.D. (Dissertations)**


**M.S. (Theses)**


**M.I.S.E. (Projects)**


Lloyd, Rick, “Coordinated Supply Chain Inventory Management for High Technology Capital Equipment Manufacturing”, Advisor Chuck Sox.


Subramanian, Satish K., “RFID and Data Synchronization”, Advisor K.R. Gue.

