REPORT OF
Research and Scholarly Activities
Academic Years 2006 – 2007
# Report of Research and Scholarly Activities
## Academic Years 2006 – 2007

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15. **GRADUATE STUDENT DEGREES**
   - Ph.D. Dissertations
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• Granting degrees since 1931
• Ranked in top 25 percent of programs by latest U.S.News & World Report
• 14 faculty members, 260 students
• Four degrees – B.I.S.E., M.I.S.E., M.S. and Ph.D.
• Dual degree – M.B.A./M.I.S.E. program
• Outreach via DVD available for all graduate degrees
• More than 4,000 living alumni
• Course work in information technologies, simulation, quality control, lean manufacturing, operations research, manufacturing processes, electronics manufacturing, financial engineering, logistics and scheduling, reliability, probability and statistics, decision analysis, human factors, ergonomics, industrial hygiene, and safety
• More than $1 million in annual research expenditures with sponsorship from National Science Foundation, 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 and Control
  • CFO, Mirant
  • COO, Apple Computer
  • VP and CIO, Verizon
  • VP, Northrup Grumman
  • Director, U. S. Army Aviation and Missile Command
  • Director of Safety, Johnson & Johnson

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

J T. Black, Professor Emeritus, 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 Engineering Technology (ABET): Reviewer for Manufacturing Education
• Alpha Pi Mu (Industrial Engineering Honor Society)
• American Society of Mechanical Engineers (ASME): Fellow
• Institute of Industrial Engineers (IIE): Fellow
• Sigma Xi, National Research Honor Society: Member
• Society for Integrated Manufacturing: Member
• Society of Manufacturing Engineers (SME): CASA Member and Fellow
• SME: Member of the Educational Foundation Board of Directors
• North American Manufacturing Research Institute of SME: Member
• Texas Higher Education Board: Reviewer for Proposals and Programs

Robert “Bob” L. Bulfin, Technology Management Professor

Ph.D., Georgia Institute of Technology, 1975

Research in developing solution techniques which can be applied to problems in the real world – defining problems, developing models, and determining solution procedures for these models; 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)
• Institute of Industrial Engineers (IIE): Senior Member
• Institute for Operations Research and Management Science (INFORMS): Member
Gerard “Jerry” A. Davis, Assistant Professor, 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

- Institute of Industrial Engineers (IIE): Senior Member
- American Society of Safety Engineers (ASSE): Professional member
- ASSE, Academics Practice Specialty: Member
- ASSE, Engineering Practice Specialty: Member
- 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
- HFES, Safety Technical Group (STG): Member

John L. Evans, Associate Professor

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

- NSF’s Center for Advanced Vehicle Electronics (CAVE): Associate Director
- Surface Mount Technology Association (SMTA): Senior Member
- SMTA, Technical Committee, 2001 to Present: Member
- SMTA/CAVE: Conference Chair, Harsh Environment Electronics Conference, Indianapolis, July 2006
- Institute of Electrical and Electronics Engineers (IEEE): Member
- Institute of Industrial Engineers: Member
- Society of Automotive Engineers (SAE): Member
Kevin R. Gue, Associate Professor

Ph.D., Georgia Institute of Technology, 1995

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

• Second Place, 2006 Outstanding Material Handling Research Paper Award, Material Handling Industry of America, for “The Best Shape for a Crossdock,” with John Bartholdi, III
• Material Handling Case Student Competition Team, national first place winners, 2006: Faculty Advisor
• College-Industry Council on Material Handling Education: President
• Transportation Science and Logistics Society, Facility Logistics Special Interest Group: Vice Chair
• Institute of Industrial Engineers (IIE): Senior Member
• Special issue of IIE Transactions on facility logistics: Co-Editor
• Institute for Operations Research and Management Science (INFORMS): Member

Emmett J. Lodree, Assistant Professor

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

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

• Institute for Operations Research and Management Science (INFORMS): Member
• Institute of Industrial Engineers (IIE): Member
• American Society for Engineering Education (ASEE): Professional Member
Saeed Maghsoodloo, **Professor, P.E.**

Ph.D., Auburn University, 1968

Research in statistical quality control, Taguchi methods and multivariate analysis

- Institute of Industrial Engineers (IIE): Member
- IIE, Editorial Board of Quality and Reliability Engineering: Member
- *IIE Transactions*: Associate Editor
- *Journal of Manufacturing Systems*: Associate Editor
- American Society for Quality Control (ASQC): Member

Chan S. Park, Ginn Distinguished Professor, 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 Industrial Engineers (IIE): Fellow
- IIE, The Wellington Award Committee, Engineering Economy Division: Chair
- Institute of Electrical and Electronics Engineers (IEEE): Member
- National Science Foundation (NSF): Panel Reviews
- *The Engineering Economist*: Editor Emeritus

Lewis N. Payton, Assistant Research Professor

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 aging work force

- Alpha Pi Mu (Industrial Engineering Honor Society): Member
- American Society for Engineering Education (ASEE): Member
- American Society of Safety Engineers (ASSE): Member
Lu Ann Sims, Instructor and Academic Advisor

M.S., Georgia Institute of Technology, 1978

Engineering education and computer methods in engineering

- ABET reviewer for industrial engineering programs
- Institute of Industrial Engineers (IIE): Senior Member and Chapter Advisor (2005)

Alice E. Smith, Professor and Chair, 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

- E.L. Grant Award for the Best Paper published in The Engineering Economist, Volume 50, 2006
- American Society for Engineering Education (ASEE): Member
- ASEE: Zone II, Best Paper Award
- Computers and Operations Research: Associate Editor
- International Journal of General Systems (Taylor and Francis): Editorial Board
- Institute of Electrical and Electronics Engineers (IEEE): Senior Member
- IEEE Transactions on Evolutionary Computation: Associate Editor
- Institute of Industrial Engineers (IIE): Fellow
- IIE Transactions: Design and Manufacturing Editorial Board
- Institute for Operations Research and Management Science (INFORMS): Member
- INFORMS Journal on Computing: Associate Editor
- Congress on Evolutional Computation (CEC200) 2006: Program Committee
Jeffrey “Jeff” S. Smith, Professor

Ph.D., Penn State University, 1992

Research in discrete event simulation and manufacturing systems design and analysis

• 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

Robert “Rob” E. Thomas, Professor, 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

• American Industrial Hygiene Association, Ergonomics Committee: Special Steering Group
• Alabama Academy of Science (AAS): Member
• American Industrial Hygiene Association (AIHA): Senior Member
• American Society for Engineering Education (ASEE): Member
• American Society of Safety Engineers (ASSE): Member
• Institute of Industrial Engineers (IIE): Senior Member
• Human Factors and Ergonomics Society (HFES): Member
Jorge F. Valenzuela, Associate Professor

Ph.D., University of Pittsburgh, 2000

Research in stochastic modeling and optimization, both theory and applications; research involves stochastic models for the evaluation of production costs and optimization of electric power generation

• William Walker Teaching Award, Samuel Ginn College of Engineering
• Institute for Operations Research and Management Science (INFORMS), Section on Energy, Natural Resources, and the Environment: Chair
• Institute of Electronic and Electrical Engineers (IEEE) : Member
• Institute of Industrial Engineers (IIE) : Member
• INFORMS: Member
• National Science Foundation (NSF): Panel Member
**Archival Scholarly Publications**

**Book and Book Chapters**


**Journal Articles**


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


Sponsored Research Projects

ACIPCO

Auburn University
  Emmett J. Lodree, “A Mathematical Modeling Approach to the Logistics of Disaster Planning and Response,” Auburn University Title VI Program sponsored by the Office of the Provost ($18,607).

Diversified Systems

Extreme Environment Electronics
  John L. Evans, “Reliability Testing of Lead-Free BGAs,” ($50,000).

Gul Technologies

Henkel Electronics

KCE American Inc.

Kemet Inc.

Mack-Blackwell Transportation Center
  Kevin Gue, “A Nationwide Maglev Train Network for Very High-Speed Freight Distribution,” University of Arkansas, $100,000 ($20,000 to AU), Co-PI Russell D. Meller.

Nanya Corporation
  John L. Evans, “ImSn Plating for Printed Circuit Boards” ($9,500).

National Aeronautics and Space Administration (NASA)
  Alice E. Smith and Jeffrey S. Smith, “Academy of Aerospace Quality,” International Space Station Program, Johnson Space Center ($330,000).

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National Institute for Occupational Safety and Health (NIOSH)

Robert E. Thomas (PI) and Gerard A. Davis, NIOSH ERC Training Grant T42/OH00843436-02; “Occupational Safety and Ergonomics Program,” ($172,901).

Robert E. Thomas (PI) and Gerard A. Davis, NIOSH ERC Training Grant T42/OH00843436-02; “Occupational Injury Prevention Research Training,” ($121,668).

Robert E. Thomas (PI) and Gerard A. Davis, NIOSH ERC Training Grant T42/OH008436-03; “Occupational Safety and Ergonomics Program,” ($199,489).


National Science Foundation (NSF)


J.C. Suhling, John L. Evans, P. Lall, G. Flowers, M. Bozack, “Center for Advanced Vehicle Electronics (CAVE), 5 Year Renewal,” National Science Foundation I/UCRC - NSF ($215,000 ) - National Science Foundation – Estimated Industry Funding ($4,000,000).

John L. Evans, “Accelerated Life Testing for Harsh Environment Electronics,” National Science Foundation CAVE ($100,000).

John L. Evans, “Reliability Testing of Leadless and Small Grid Array Packages,” National Science Foundation CAVE ($50,000).


Kevin Gue, “Designing Distribution Centers for the Service Economy,” National Science Foundation, ($400,000) (approx $170,000 to Auburn), Co-PI: Russell D. Meller (Univ. Arkansas).

Tennis umpire software developed by Jeff Smith and master’s graduate Adam Farmer has been used at the past two U.S. Open Tennis Tournaments.
Chan S. Park, “Pricing Transmission Congestion to Alleviate System Stability Constraints in Bulk Power Planning,” ($363,000), with Mark Halpin and Jorge Valenzuela.


Alice E. Smith, “Industry/University Cooperative Research Center for Advanced Vehicle Electronics (CAVE), Research Experiences for Teachers,” with Jeff Suhling (Mechanical Engineering, Auburn University), (NSF), Supplement to #EEC-9907749, ($20,000).

Alice E. Smith, “Next Generation of Manufacturing Engineers for the Automotive Sector,” with John L. Evans and Peter Jones (Mechanical Engineering), #DUE-0422361, ($400,000).


National Space Science and Technology Center (NSSTC)


Rockwell Automation


Office of Naval Research


Siemens

John L. Evans, “Printed Circuit Board Testing for Harsh Environment Applications,” ($75,000).


Jeffrey S. Smith, “Simulation of Electronics Assembly Lines,” ($21,000).

Southern Consortium for Injury Biomechanics


United States Department of Agriculture (USDA)


Bold type denotes faculty of the Department of Industrial and Systems Engineering at Auburn University
Graduate Student Degrees

Ph.D. (Dissertations)


M.S. (Theses)


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

Dr. Maghsoodloo with doctoral graduates Victoria Jordan (now at Vanderbilt University Hospitals) and Gultekin Ozdemir (now at Suleyman Demirel University in Turkey).


M.I.S.E. (Projects)

Shaman Ahuja, “Energy Control Program (Lockout/Tagout) Audit,” Advisor, Jerry Davis.

Mohammed Ben Jazia, “Scheduling Production Using Linear Programming and Neural Networks,” Advisor, Jorge Valenzuela.


Deepesh Desai, “Development and Validation of an Ergonomic Job Rotation Schedule at a Manufacturing Facility,” Advisor, Jerry Davis.


Adityay, Konduru, “Real Options Approach to Evaluate a Multi Phase Project of a Telecom Firm,” Advisor, Chan S. Park.


Jason Rivers, “Developing an Online Office Ergonomics Continuing Education Course Curriculum,” Advisor, Jerry Davis.


Ozge Sumer, “The Distribution of Containerized Imports from Ports to Shelves,” Advisor, Kevin R. Gue.

