

Department of Manufacturing and Industrial Technology

Report Summary to COE

January 1, 2011 to December 31, 2011

Categories

Student Recognition & Awards

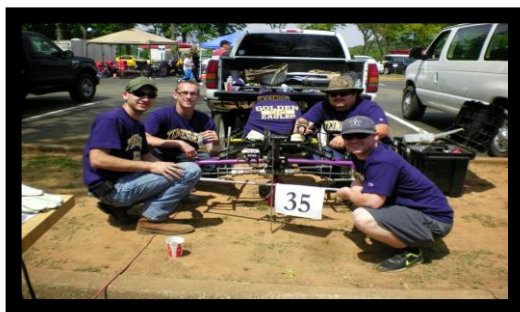
- Jeremy Prince (Dr. Fidan's undergraduate research student) received 2011 International Extreme Redesign Award

Student Organization Awards

- Graham Smith, Jarret Smith, and Beau Wells, MIT students, received \$1,000 scholarships from the 2011 Foundry Education Foundation.
- Graham Smith received \$2,000 from Glen Birtwhistle Memorial Scholarship 2011 College Industry Conference/Foundry Education Foundation.

Student Competitions Participation

- As part of the MIT 3403 & 4620 classes, the moonbuggy team designed a new light weight tandem moonbuggy and participated in the 2012 Great MoonBuggy race which took place in the NASA Marshall Space Flight, Huntsville Alabama. In this international competition, TTU team placed 32th in college division of 87 Moonbuggies.



Faculty Recognition & Awards

Dr. Ismail Fidan

- Dr. Fidan received the 2011 International Extreme Redesign-Student Educator Award.
- Dr. Fidan received 2011 Brown Henderson Outstanding Engineering Faculty Award.

Dr. Ahmed Kamal

- Dr. Kamal received an NSF Fellowship awarded by NACK Center, Penn State University, State College, PA to attend Hands On Nanotechnology Workshop held in State College, from Nov 14-18, 2011

Curriculum & Degree Innovations

- Representatives from the Volkswagen Academy, Chattanooga State's engineering technology division and TTU's industrial technology department crafted an agreement that will support long-term sustainability in educating a qualified and skilled workforce critical for the emergence of the automotive industry and the manufacturing workforce needs of the greater Chattanooga economic region.
- A workforce development system will provide a seamless articulation of education and training through Chattanooga State and Tennessee Tech University for students to obtain a Bachelor of Science degree in Engineering Technology.
- The department worked in collaboration with the college of engineering curriculum committee, the dean's office and the Industrial Advisory Board on changing the BS in Industrial Technology to BS in Engineering Technology.

International Activities

Dr. Ahmed ElSawy

- "Automation of a Biodiesel Processor from Waste Vegetable Oil – An Undergraduate Experience" presented at the Association of Egyptian American Scholars' 38th Annual International Conference, Ain Shams University, Cairo – Egypt, December 26th – 29th, 2011.

- Reinstated the MOU between TTU and Arab Academy for Science, Technology and Maritime in Alexandria Egypt.

Dr. Ismail Fidan

- I. Fidan (PI), International Service Learning, TTU QEP Program, \$12,000.00, December 2011-August 2012.

Inter-University Activities

- Drs. ElSawy, Kamal, and Fidan participated in Windows on the World festival.
- Drs. ElSawy, Kamal, and Fidan volunteered to serve as a 2011 Tennessee Tech University (TTU) Research Day Judge.
- Under Dr. ElSawy supervision, the senior project students designed and produced the medallions used for the recognition of the outstanding researcher's students.
- Under Dr. Vondra supervision, the American Foundry Society students produced brass eagle heads for the recognition of the 2011 Alumni Awards for TTU's Foundation.
- The MIT Faculty participated in the college Job Orientation Fair Activities organized by Basic Engineering.
- The MIT Faculty and students from AFS, FSAE, Moonbuggy, and SME participated in the Homecoming activities, Oct 2011.

Community Service Activities

Dr. Ahmed ElSawy

- Represented Tennessee Tech University with others on Volkswagen Chattanooga and Chattanooga State Community College who have partnered to provide education, training and job placement efforts that will align with the unique needs of Volkswagen, their tier-one parts providers and the growing manufacturing industry in the state.
- Serving on the ATMAE Certification for as Vice Chair of Research & Development till 2013.
- Serving on the ATMAE International Accreditation Committee.
- Provided consultation and Training on Geometric Dimensioning and Tolerancing for two companies in Tennessee.
- Moderated sessions in the Association of Egyptian American Scholars' 38th Annual International Conference, Ain Shams University, Cairo – Egypt, December 26th – 29th, 2011.

Dr. Ismail Fidan

- Served as a ABET Program Evaluator for Western Michigan University.
- Developed and built Science laboratory pieces for Algood Middle School.

Dr. Fred Vondra

- Serving as a sergeant on the Putnam County Sheriff's Reserve Unit
- Past Grand Knight of Knights of Columbus #6645 Morris Council.

K-12 STEM Outreach

- Dr. Fidan organized an Art2STEM Project TTU Visit for the 150 Metro Nashville Public School Girls on October 2011.

External Partnership Successes (Industry/Community)

- Dr. ElSawy worked with representatives from the Volkswagen Academy, Chattanooga State's engineering technology division and TTU's industrial technology department crafted an agreement that will support long-term sustainability in educating a qualified and skilled workforce critical for the emergence of the automotive industry and the manufacturing workforce needs of the greater Chattanooga economic region.
- Dr. ElSawy worked with TTU's FSAE team in preparing the 2007 FSAE Formula car to be our TTU contribution to VW-Chattanooga Show when they hosted the Global group top management conference in September 2011. This is the top 300 executives from the entire VW group (i.e. Bugatti, Lamborghini, Audi, Bentley, etc.) and their spouses. Part of this event was a tour of the Academy and FSAE featured the newly introduced TTU-VW-ChSCC degree program recently introduced.

Professional Activity Summary

Two Journal Publications Published

- I. Fidan, "AM: Way to increase STEM Pathways," *Manufacturing Engineering*, v.147, n.5, pp.132-134, November 2011.
- M. A. Arslan, I. Fidan, "Productivity Analysis of an Electronics Re-Manufacturing System through Stochastic Petri Nets and Artificial Neural Networks," *Scientific Research and Essays*, Vol. 6(21), pp. 4510-4516, 30 September, 2011.

Four Conference Publications Published

- S. Rogers, S. Harris, I. Fidan, and D. McNeel, "Art2STEM: Building a STEM Workforce at the Middle School Level," *2011 ASEE Annual Conference*, Vancouver, BC, Canada, June 26-29, 2011.
- L. Choate, K. Hatipoglu, I. Fidan, and M. Abdelrahman "RET Project in Additive Manufacturing," *2011 ASEE Annual Conference*, Vancouver, BC, Canada, June 26-29, 2011.
- Ahmed Kamal "Assessment of autonomic function in Epileptic patients using nonlinear method" published at Biomedical Engineering Society Conference proceeding, held in Hartford, CT, October 2011.
- Ahmed Kamal "Autonomic function assessment in Alzheimer's Patients using spectral Analysis" Published at Biomedical Engineering Society Conference proceeding, held in Hartford, CT, October 2011.

Six Presentations

- Ahmed ElSawy*, and others "Automation of a Biodiesel Processor from Waste Vegetable Oil – An Undergraduate Experience" presented at the Association of Egyptian American Scholars' *38th Annual International Conference*, Ain Shams University, Cairo – Egypt, December 26th – 29th, 2011.
- Ismail Fidan, "The Development of a 3D Printing Knowledge Base," *121th Tennessee Academy of Science Annual Meeting*, Union University, Jackson, TN, October 28, 2011. (Abstract published in *TAS Journal*).
- Ismail Fidan, "Art2STEM: Building a STEM Workforce at the Middle School Level," *2011 ASEE Annual Conference*, Vancouver, BC, Canada, June 27, 2011.
- Ismail Fidan, "RET Project in Additive Manufacturing," *2011 ASEE Annual Conference*, Vancouver, BC, Canada, June 27, 2011.
- Ahmed Kamal was a Guest Speaker at Cookeville high School Students on Robot Sensing, October 2011
- Ahmed Kamal was Guest Speaker in "Nanotechnology applications in Medicine" presented at Hands on Nanotechnology Workshop held at Penn State University, State College ,PA ,Nov 14-18, 2011

Two Research Proposal Reviewers

- Dr. Fidan served in 2011 NSF TUES Type 1 panels
- Dr. Fidan served in 2011 NDESEG National Defense Science and Engineering Graduate Fellowships

Thirteen Journal Reviews

Dr. ElSawy

- reviewed papers for ASEE 2011 and 2012 Conferences
- reviewed papers for International Journal of Modern Engineering (IJME)

Dr. Fidan

- reviewed papers for Scientific Research and Essays
- reviewed papers for Journal of Industrial Technology
- reviewed papers for ASEE 2011 and 2012 Conferences
- reviewed papers for 2011 and 2012 International Multi-Conference on Engineering and Technological Innovation
- reviewed papers for the International Journal of Innovation and Sustainable Development
- reviewed papers for Rapid Prototyping Journal
- reviewed papers for Robotica Journal
- reviewed papers for International Journal of Human-Computer Studies
- reviewed papers for International Journal of Advanced Manufacturing Technology
- reviewed papers for Advances in Engineering Software
- reviewed papers for Journal of STEM Education: Innovations and Research

Textbook Reviews:

- Dr. Fidan reviewed a book entitled "Product Design for Manufacture and Assembly, 3rd Edition" by CRC Press (for SME).
- Dr. Fidan reviewed a book entitled "Graphing Simulation Tools for AutoCAD by Industrial Press."

Journal Editorial Board

- Dr. ElSawy serves on the International Review Board for the International Journal of Modern Engineering
- Dr. Fidan started serving as an associate editor for the IEEE Transactions on Components, Packaging and Manufacturing Technology starting January 2011.

New & Old Faculty Textbooks and New Chapters Published

- I. Fidan, "College and University Education and Research in Additive Manufacturing," pp. 216-234, *Wohlers Report 2011. (Book Chapter)*, ISBN: 0-9754429-7-X.
- Ahmed ElSawy and Christopher LeMaistre, *Computer Integrated Manufacturing – A System Approach*, UNIPUB/Kraus International Publications, White Plains, New York, 1987.

Major Research Grants Totaling > \$0.25M

- A. ElSawy (PI), Advanced Systems Development of the MRWS: a Remote Climbing Robot, National Shipbuilding Research Program (NSRP) and the Maritime Technology (MARITECH) program, June 28, 2010 to January 31, 2012; extended to 3/30/12 (funded \$24,011.00).
- A. ElSawy (Co-PI), Tennessee Space Grant Consortium, (funded, the MIT share is \$2,000).
- I. Fidan (Co-PI), STRATEGY: From Art to STEM - A Creative Journey of Discovery: A Transformational Project for Nashville Middle School Students, National Science Foundation, \$1,312,142.00, March 2009-February 2012.
- I. Fidan (Senior Faculty Investigator), STEP: Math Success for STEM Majors, National Science Foundation, \$900,000.00, June 2010-May 2013.
- I. Fidan (PI), STEM Regional Innovation Hub, First to the Top, Tennessee Government, 40,000.00, Pending Approval.
- I. Fidan (PI), The Development of a Remotely Accessible Rapid Prototyping Laboratory, National Science Foundation, \$142,600.00, June 2006-March 2011, completed.
- I. Fidan (PI), Regional STEM Outreach Program, TTU QEP Program, \$2,800.00, September 2010-August 2011, completed.
- I. Fidan, 2011 TTU QEP Proposal was declined in early 2011; it was enhanced and accepted in second round.
- Ahmed Kamal (PI), TTU Office of Research Faculty Grant for study of nonlinear Dynamics Autonomic function in patients with Epilepsy, April 2011- June 2012, (funded \$5,000.00.)
- Ahmed Kamal (PI), QEP (Quality Enhancement Plan) grant awarded in Robot Sensing for \$ 1,500.00 until June 2012.