

On behalf of the Department of Engineering, the organizing committee extends a warm welcome to each of you to the IPFW Engineering Research and Design Conference of 2012. This is the first such conference and it is our hope that the conference will grow and become an annual event at IPFW.

The engineering program at IPFW is active in integrating design into its curricula. Design culminates in a two-semester, senior project. Research is also an important focus of the department, and students at both the graduate and undergraduate levels are encouraged to participate.

The main purpose of this conference is to share the research and design work that our undergraduate and graduate students have done this academic year.

Please, accept our best wishes for an enjoyable conference.

Josué Njock Libii, Chair of the Committee and Associate Professor of Mechanical Engineering

Abdullah Eroglu, Co-Chair of the Committee and Assistant Professor of Electrical Engineering

Donald Mueller, Chair of the Engineering Dept. and Assoc. Professor of Mechanical Engineering



Registration is required.

[www.engr.ipfw.edu/
IPFW_R&D_Conference_Registration.shtml](http://www.engr.ipfw.edu/IPFW_R&D_Conference_Registration.shtml)



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Engineering Research & Design Conference



INDIANA UNIVERSITY-PURDUE UNIVERSITY FORT WAYNE
Walb Union
27 April 2012

IPFW Engineering Research and Design Conference¹
Friday, 27 April 2012 – IPFW Walb Union

8:30 – 9:00	Welcome and Refreshments (Walb Union Ballroom Room 126)	
	CME Track – Walb Union Room 149	ECE Track – Walb Union Room 150
9:00 – 10:15	Session CME 1: Energy & Environmental Systems Moderators: D. Chen, D. Mueller 1. Modeling a Solar Collector A. Saleh (advisor: H. Abu-Mulaweh) 2. An Investigation of the Power Produced by Miniature Wind Turbines D. Drahozal (advisor: J. Njock-Libii) 3. Design of Innovation Filtration Technologies for Sustainable Drinking Water Supply T. Bourdon, Z. Estes, and E. Hauter (sponsor: IPFW, advisor: D. Chen) 4. Nozzle Plume Effects on Sonic Boom M. Kretschmer (sponsor: NASA Glenn Research Center)	Session ECE 1: RF/Microwave Moderators: A. Eroglu, C. Pomalaza-Ráez 1. UHF RFID Component Design N. Reynolds (sponsor: NSF, advisor: A. Eroglu) 2. Wireless Monitoring and Control of Electrical Machines A. Straub (sponsor: NSF, advisors: C. Pomalaza-Ráez, A. Eroglu) 3. RFID Technology for Electric Machines J. Madison (advisor: A. Eroglu) 4. Interactive Matching Network Tool for RF Applications B. Westrick (advisor: A. Eroglu)
10:30 – 11:45	Session CME 2: Modeling & Simulation Moderators: Z. Bi, S. Ashur 1. Communication Channel Modeling and Simulation using GPUs R. Dill (sponsor: NSF, advisors: C. Pomalaza-Ráez, E. Thompson) 2. Design and Development of a Fixation Instrument or System S. Bernard, D. Drahozal, D. Hudson, and M. Kretschmer (sponsor: DePuy, advisor: N. Younis) 3. Design of a Universal Remotely Triggered Firing Actuator D. Gerber, J. Janssens, D. Murphy (sponsor: Zimmer, advisor: D. Mueller)	Session ECE 2: Controls & Robotics Moderators: C. Pomalaza-Ráez, Y. Liu 1. Active Self-Landmarking to Mobile Robot Navigation through Wireless Communications G. Harden (sponsor: NSF, advisor: Y. Liu) 2. Low-Cost Autonomous Multi-Robot Network M. DeMange, R. Tamashiro, and B. Westrick (sponsor: IEEE, advisor: Y. Liu) 3. Semi-Autonomous Wireless Controlled Robot M. Kadous, T. Nguyen, and J. Slonaker (sponsor: IPFW, advisor: E. Thompson, J. Isaacs)
12:00 – 1:15	Lunch (Walb Union Ballroom Room 126) IPFW Engineering Senior Design: Industry and University Partnership Steve O'Shaunnessy (Parker Hannifin), Tim Loos (Raytheon), and Don Mueller (IPFW)	
1:30 – 3:30	Session CME 3: Materials/Mechanics/Structures Moderators: M. Alhassan, J. Njock-Libii 1. Design of a Concrete Canoe J. Allen, A. Bade, A. Grabill, and J. Sample (advisor: M. Alhassan) 2. Redesign of a Rail Bending Test Machine C. Heckley, A. Nicolette-Baker, B. Pettit, and Z. Singh (sponsor: Steel Dynamics, advisor: Z. Bi) 3. Fin Compression Station T. Butts, Z. George, D. Rode, and B. Taylor (sponsor: Parker Hannifin, advisor: N. Younis) 4. Automatic Gripper Arm Robot I. Ackon, J. Knerr, D. McVay, and S. Strickland (sponsor: Cooper Standard, advisor: J. Njock-Libii)	Session ECE 3: Wireless Technology Moderators: T. Cooklev, E. Thompson 1. Circuit for Temperature/Pressure Sensing and Wireless Data Collection N. Bola, B. Frane, A. Izmirli, and M. Robinson (sponsor: Parker Hannifin, advisor: T. Cooklev) 2. Software-Defined Radio Testbed: A Platform Enabling Cognitive Radio Research D. Clendenen (sponsor: NSF, advisor: T. Cooklev) 3. Wireless Robot Communications System J. Thorn (sponsor: NSF, advisor: E. Thompson, J. Isaacs) 4. Real-Time Software Defined GPS Receiver J. Hershberger (sponsor: NSF, advisor: E. Thompson, T. Loos)

¹ Note: Individual (undergraduate research or MSE) presentations are 15 minutes. Team (Senior Design 1 & 2) presentations are 30 minutes.