The fall semester of the 2010-2011 is full of activities for Union University Engineering—ten engineering projects, three of which are Capstone, Community outreach through the town & gown lecture series on Energy Sustainability and Stewardship, Homecoming, new student Recruiting, making and keeping in touch with Union Alums, making and keeping in touch with the industry and preparing for next year’s ABET visit.

Students are busy and Objectives are being achieved.
Faculty are busy and Significant Learning is to be the legacy.

Don Van, PhD., PE., CEM

Chair’s Message

Dr. Bernheisel presented a talk to the American Scientific Association 2010 Conference, Washington, D.C., titled “Moral, Ethical, and Social Policy Considerations for Liver Transplantation and Two Alternatives for Patients with Primary Schlerosing Cholangitis”.

Dr. Russ researched Christian influences in math, physics, and engineering; wrote a paper that has been accepted for publication as a chapter in a forthcoming book.

Dr. Pingen’s paper entitled *Optimal Layout Design for Instationary Flows* was presented at the 13th AIAA/ISSMO Multidisciplinary Analysis & Optimization Conference, 13-15 September, 2010, Fort Worth, TX (coauthors: Sebastian Kreissl, Kurt Maute).

Dr. Schwindt led a humanitarian GO trip to North Africa to continue partnering with missionaries there, applying engineering to development and relief efforts. Helped install solar-powered well pump; subsequently consulted on the system; investigated low-cost wind power system.

Dr. Van was selected and trained as a program evaluator for ABET.
Jackson Energy Authority was born from a heritage of service that started in the late 19th century when electric power, manufactured gas, and a public water and wastewater system were first provided in Jackson. Created in 1959 under the name of Jackson Utility Division, three separate utilities (natural gas, electricity, and water/wastewater) joined together with a private act of the Tennessee Legislature. At our request in 2001, the Tennessee Legislature approved another private act that modernized Jackson Utility Division’s corporate structure, thus creating Jackson Energy Authority.

Jackson Energy Authority is one of the few public utilities in the United States offering customers all major utility services from one company. Our customer base includes about 45,000 residences, businesses and industries in Jackson, TN and parts of Madison County. In addition to electricity, natural gas, propane, water, and wastewater services, we built a broadband network designed to serve the rapidly expanding telecommunications needs well into the future. As one of the nation’s largest and most advanced fiber optic broadband networks, our system delivers an extraordinary level of service and value to customers. This fiber optic network, owned by our community, provides cable tv, high speed Internet, and telephone service to our customers.

The foundation of Jackson Energy Authority and its employees is built on providing exceptional service to our customers, from utilities to customer relations. We have made it our mission and vision to improve the quality of life in our community by creating value, leading industrial and economic development and exceeding the expectations of our customers. We also invest thousands of hours of volunteer time, skills, educational and financial resources in various organizations, civic groups, community events and programs.

In recognition of our dedication to exceptional service, Jackson Energy Authority has received many awards. These include the Achievement Award from Tennessee Center for Performance Excellence, Best Tasting Water from Tennessee Association of Utility Districts, Reliable Public Power Provider’s RP3 Diamond (2 times), Best FTTH Public Utility Network from Broadband Properties, Best Cable/Satellite TV Provider from Jackson Sun Reader’s Choice, Best Internet Service Provider from Jackson Sun Reader’s Choice, Public Information Award of Excellence from American Water Works Association, the Apex Award from Utilities Telecom Council and the American Public Power Association’s Community Service Award.

Our facilities include the Administrative Office at 119 E. College St., the JEA Customer Center at 2030 Pleasant Plains Extended, substations, operation and distribution centers, treatment plants, pumping stations, and other locations throughout the Jackson/Madison County area.
Current Capstone Projects by Graduating Seniors

This year the three teams of graduating seniors will showcase their creativity and problem-solving skills by accepting the design challenges to do the following projects:

The IEEE Robot— the team is working on designing and building a robot to aid rescue workers to do their jobs more effectively and safely during and after a natural disaster. The robot is to get in a hazardous place autonomously by avoiding hazards along the way to seek victims, sense vital signs, transmit exact location and vital status to a command center and move on.... This is Student Hardware Competition hosted by IEEE SE Conference in March 2011 in Nashville, TN.

The Basic Utility Vehicle— the team is working on designing and building a basic utility vehicle (BUV) that endures challenging terrains of rural Africa, that is most economical to build, that can be easily transported overseas, that will be donated to mission work in the third world countries. This will be done after the competition in Indianapolis, IN this coming April. The competition is hosted by the Institute of Affordable Transportation.

The Hammam— The team is working on designing and building a hammam (a public bathhouse) as a humanitarian project for a North African country. The hammam is to use renewable energy, to use locally produced materials, to produce stable hot water supply, to have proper and reliable piping system, to be aesthetically and socially acceptable to the natives, and to be affordable. The design will be implemented next March overseas.

Alumni News:

- True Union! Congratulations to Debi Eley ('08) and Jeremy Sullivan ('07) on their recent marriage (May 29). This is the first engineering Union grads who also became unionized in life. God bless!!! Enjoy your "miniature German coyote fox" puppy.
- Debi Sullivan has been teaching high school math and physics after spending several years at ABB, Inc.
- Jeremy Sullivan has been working for Millmasters, Inc here in Jackson after spending several years at American Automated, Inc.
- Joshua Shrewsberry ('07) has been back to Jackson working for Logical Systems. He’s been giving his expertise in our Engineering lab by straightening out and improving the PLC-operated conveying system. Thanks, Josh.
- Aaron Taylor ('10) is with the Nashville Bun Company
- Blake Waggoner ('08) will start working for Missile Defense Agency in December. Blake currently is in Rwanda on a two-month mission after finishing his MS degree in Aerospace Engineering at the University of Washington. Congratulations!
Zack Jackson ('10) Currently with TBDN- Tennessee Company in Jackson as a manufacturing engineer. His job has a lot to do with the continuous improvement process. Got married on Aug. 14th and he said “everything is going smoothly”. Playing video games, wrenching the '73 Corvette, building and repairing electrical hobby projects occupy most of his free time.

Bradley Kiddie ('10) presented his honors thesis entitled “Engineering Abstraction and Synthesis: An Aristotelian and Hegelian Perusal”. Brad is currently working as a TA while pursuing his PhD study at Vanderbilt University in Electrical Engineering.

Rabo Garba ('09) is a Field Engineer with Dupont in Nashville, TN. He and his wife, Cassie, are expecting their first baby boy in December. Congratulations!!!

Fall 2010 Homecoming!

Sean Norton ('10) visiting with Dr. Russ’ son, Timothy

Debi Eley Sullivan ('08) and Claire Elmblad ('11)

Ethan Wilding ('08) and wife Kelly visit with Dr. Russ’ daughter, Rachel

Ethan visiting with Dr. Russ’ children, with Dr. Bernheisel helping out!
Community Outreach:

Union Engineering co-hosted a Town & Gown lecture series aiming at informing and educating the public about the important issue of Energy Sustainability and Stewardship. The 5-week lecture series were well attended. Over 100 came to hear Dr. William McDonald (President of Enerpro, LLC) and Mr. Lloyd Hansen (Owner of Nortec, Inc) to learn about oil exploration, natural gas new applications, the transition fuels, the responsibilities during the transition, the interrelation of the society, the environment and the economy.

Dr. Russ’ growing family!

In case you haven’t heard, Dr. Russ, husband Bobby, and son Timothy welcomed a little girl to their family! Mom and Dad took a trip to China in early September and brought back Rachel to join their home. We congratulate and rejoice with them for God’s blessings upon their family!
Fall Semester Engineering Projects
Public Presentations:

**EGR 261**
Title: “Thinking about how machines think”
Location: PAC A-7  **Dates & Times:** 11/16 at 1:40pm and 11/18 at 2:40pm

**EGR 361**
Title: “Designing a computerized reservation system”
Location: PAC A-7  **Date & Time:** 11/22 at 3:00pm

**EGR 101**
T-Shirt Gun
Location: Fred Delay Gymnasium  **Date & Time:** 11/30 from 12:15 – 1:05pm

**EGR 475**
Control Engineering Projects
Location: PAC C-18  **Date & Time:** 12/1 from 11:00 – 11:50pm

**EGR 342**
Experimental Methods Projects
Location: EGR Computer Lab  **Date & Time:** 12/2 from 10:50am – 12:05pm

**EGR 491**
Projects:
- Design and build an autonomous robot to aid rescue workers during/after disasters
- Design and build a basic utility vehicle to aid with the needs for enduring and reliable transportation in third world countries
- Design and build a model hammam (bath-house) for a North African country using sustainable engineering and technology
Location: PAC B-36  **Date & Time:** 12/3 at 8:00am

**EGR 450**
Projects: Rankine Cycle Lab Experiment and Solar Water Heater
Location: PAC C-16  **Date & Time:** 12/3 at 9am

**EGR 330**
Project: “Conduct an economic feasibility study for a utility company in its quest to meet increasing electrical demands while attempting to retire the aging coal-fired power generation units.”
Location: PAC C-18  **Date & Time:** 12/3 at 1:00pm
Dr. Schwindt and a group of Union students, including 3 EGR majors, went to North Africa in April to help with the installation of a solar water pump and to minister to the people there in additional ways.