



**Danville
Area
Community
College**

Alumni News

- Ryan White stills works for Lockheed Martin's space program, but now he is a lead engineer.
- Jason Smith works for IDOT and recently began construction of a new interchange on Interstate 57 & Curtis Road.
- David Schnelle is the city engineer for Danville, Illinois.
- Rob Adolph interned at American Consulting in Indianapolis.
- David Freeman works for CB&I. He spent 2005 in Pittsburg on the design phase of a Liquefied Natural Gas Terminal. He is now in Maryland working on the building phase.
- Kevin Smith has been promoted to Assistant County Engineer for Warren County. He completed a \$1,000,000 asphalt overlay project this last year and will be replacing 3 bridges this summer.
- Rob Adolph, Brian Rudin, Sam Cole, Josh Gabehart, Rigoberto Torres, Ben Cahill, Darrin Shrout, and Tom Alarie returned for the alumni luncheon. For comments they shared, see the DACC Engineering Web-page.

Inside this issue:

- Girl Power 2
- Matt Ellermetts 2
- Brain Rudin 2
- Industry Tours 3
- Shawn Lantis 3
- Ryan Carlton 4

DACC Engineering Update

Issue 9

Gaining REAL Engineering Experience as a Student

By Robert Myers
Robert recently graduated from DACC and transferred to U of I. He worked two internships while at DACC including Freight Car America and Fiberteq.

From the beginning, it was surprising how involved I was with the functions of Freight Car. Some would say I was initiated by fire. Normal duties include AutoCAD drawings of custom parts and major projects. In addition, I develop pads or production instructions with text and picture representations of tasks. My first task was to complete 2D drawings for side sheet templates. These 2D templates had to be drawn to scale in AutoCAD, and served as references for the Automatic CNC drill. If my drawings were incorrect or flawed, the machine would drill incorrectly, meaning I would have wasted company time and materials. The pressure was on!

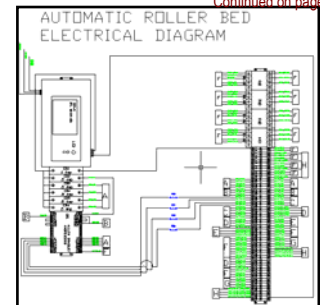
After successfully completing the 2D templates, I was assigned the Blast Project, which refers to a blast room that is similar to a sand blasting room. The primary differ-

ence is that the blast room uses metal grit expelled in the vicinity of 50 – 100 psi. My assigned job was to make the environment safe for people that would possibly enter or be around the blasting room. To insure safety, I decided to use limit switches to detect whether or not the doors to the room were open. If any door was ajar, the air pressure would be restricted, rendering the blast guns nonfunctional. To determine my bill of materials, I drew a logic schematic of what would be needed to incorporate an emergency stop system. Then, I proceeded in making the actual schematic or the conceptual electrical drawing. Panel drawings and wiring diagrams followed to ensure that installation would be easy. I researched quotes for all the items on my bill of materials and completed a requisition sheet in order to get approval to purchase.

My next major project was the Automatic Roller Bed Project. There is a section of the production line where people push side sheets down a series of rollers.

These sheets of metal are what are on the sides of train cars. They are approximately 40 feet long and 8 feet wide. The actions taken for this project were similar to the Blast Project, but it had a different purpose. This purpose was to automate the rollers so that pneumatic motors moved the sheets down the rollers to each position, but keep the area near it as safe as possible. For safety, I used a series of emergency stops, but the most expensive equipment was the safety mats which keep all the walkways safe during operation of the roller bed. Other important devices needed for this project were inductive proximity

Continued on page 3



Example of Autocad work. This is a photo of the wiring diagram models path of current.

Learning From Internships: Justin Berhens & City of Danville Engineering

I am involved in updating the engineering department's filing system, and their GIS mapping of the city. I work with MicroStation which is much like AutoCAD. It is used to lay sewer lines onto an aerial photo of the city. When I complete this long term project, city engineers will be able to link this map to their GIS system. The GIS system will measure the efficiency of the sewers. Ultimately, my work will

help engineers to improve the sewer systems.

Currently, I'm involved in a traffic study of the downtown Danville area which will determine the legitimacy of converting some of the one way streets into two way streets. I also assist with J.U.L.I.E. which locates storm and sewer lines for the residents. In the next few months, I will be participating in the detailed survey of Lynch

Road which is supposed to be reconstructed by 2007. I will also be assisting in two bridge replacements: Hungry Hollow and Stoney Creek bridge.

This internship has taught me a great deal more than I expected. It has enabled me to gain experience with three different computer programs, and it has given me a new respect and technical knowledge of the city!



From the top: Kelli, Melissa, Adrienne, and Nicole.

Girl Power: Overcoming Stereotypes

Engineering is a field of study that historically has been dominated by males, but each year more and more females successfully join the ranks of engineering. DACC engineering has had several female engineering students.

Kelli Ratcliff is a civil engineering student. As a child, her favorite toys were Legos and Erector Sets. She loved the challenge of creating something new and thinking outside of the box. Later in school, she developed an interest in mathematics and science. Her interest in these subjects, as well as her love for problem solving, led her to civil engi-

neering. She chose to attend DACC engineering because she heard about its Internship Program which boasted that they placed 100% of all engineering students requesting internships in the last two years.

Melissa Blackford recently joined the engineering program. She was introduced to this career by her father who is an engineer. Melissa has an interest in how engineering applies to biological systems. She came to DACC after being offered the Presidential Scholarship. Melissa loves competitive sports and currently in on the women's basketball

team.

Adrienne Scott is a civil/chemical engineering major who is interested in relating these fields to environmental applications. She chose engineering because it is a field that offers an opportunity to have a lasting effect on today's society and future generations. She came to DACC because four year universities were too expensive. Here she can get the same education for less money. For fun outside of classes, Adrienne trains dachshunds.

Nicole Ebert has recently graduated from

Continued on Page 4

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I chose engineering because I have always enjoyed learning how and why things work, as well as trying to make them better. Also, the demand for engineers is very high, especially in the area of electronics and electricity. I am attending DACC for the first segment of my college education because it is a very smart option. If you contrast a transfer program through DACC with attending all four years at a university, the cost savings are very substantial—approximately \$20,000.

Plus, after transferring, your diploma from the university will be identical to one received by a student who attended all four years at the university.

One great thing about DACC is the fact that I have peers who are in my exact classes that share the same goals. They have proven very helpful in many cases. Also, if I ever have a question on a subject, the professors are readily available for personal, one-on-one interaction. On more than one occasion, I

have seen professors ask specific students if they understand the topic. The great thing about this interaction is that the engineering courses at DACC are the fundamental ones on which the rest of your education will be based, so grasping the concepts in full is vital. This personal attention does not happen at many large universities.

Another benefit to attending DACC is the opportunity to work an internship related to your

Continued on Page 4

Alumni News: Junk Yard Engineering



Brian Rudin, DACC engineering alumnus, is currently attending the mechanical engineering program at University of Illinois-Urbana. As part of his internship within U of I, Brian had the opportunity to help design and build a viscous fluid spinner (shown to the left). The project resulted from a scientist's need for a device that would mix PMMA.

PMMA or Poly(methyl methacrylate) is a clear plastic, used as a shatterproof replacement for glass. Other uses in-

clude the surfaces of hot tubs, sinks, and the ever popular one piece bathtub and shower units. PMMA is also found in paint and can be added to lubricating oils and hydraulic fluids to lower the working temperature of the devices. Brian's challenge was that normal spinning devices are not hefty enough to spin the viscous PMMAs.

To solve the problem cheaply, they used a power supply from their own shop and two junkyard windshield wiper motors that

could supply the necessary torque. They added new variable speed controllers and potentiometers so that they could adjust the speed and direction of spin. Magnets would be attached to the motors to control the Teflon Spinner that would be placed in the PMMA. Of course, special magnet clamps had to be designed and built using the Fused Deposition Modeling machine in the ME lab. The platform to hold the beakers was planned. The spinner worked great!

Industry Tour: Holmes Brothers, Inc.

DACC students recently explored a local industry to learn more about fabrication. They visited Holmes Brothers, Inc. This tour was a result of owner Bob Muirhead's interest in establishing a partnership with DACC. Holmes Brothers considered offering 100 hours of experience to a selected engineering student. The purpose of the internship was to familiarize the student with the fabrication process and provide experience with CNC equipment.

The students enjoyed the morning session with owner

Bob Muirhead and employee Dan Crisp. Holmes Brothers, Inc. produces custom parts for the aerospace, defense, power generation, and manufacturing industries. Their brochure boasts that "No parts are too large or too small." The students witnessed production of a part for a company in Germany that designs furnaces that make use of jet engine designs. And indeed their product size (approximately 9000 pounds and the size of a classroom) is fascinating, but the fabrication processes are even more

amazing. The plant uses a combination of old and new equipment to produce their product. The automation for their pulse welding, cutting tools, and sheer size of the lathes and mills was incredible. The company was even kind enough to suspend production of their press until the students arrived, so they could see it in action. Bob and Dan also allowed the students to ride their largest mill, about the size of an average classroom, while discussing the final stages of production.

Alumni News: Shawn Lantis

My family and I are now back in Illinois after spending about six months in Washington state where I worked on a nuclear vitrification plant. Much of the enriched radioactive components used in the bombs dropped on Hiroshima and Nagasaki were generated at Hanford, Washington. The liquid by-products of that process were stored in single-walled, underground tanks back in the 50's. The tanks have

since begun to leak, threatening the groundwater supply as well as the Columbia river (the lifeblood of the northwest). The vitrification plant will provide a means of encapsulating the radioactive waste in glass, thereby eliminating the risk of environmental contamination via leaking tanks. Unfortunately, government funding cuts have put much of that project on hold. Amazing the history lessons you can get

simply by being an engineer!

At the moment, I am in the middle of a couple of steel sphere designs (the huge golf ball looking things you see when you drive by an industrial plant). These are very unique structures and associated support systems so I have a lot of design options and engineering judgement to consider. I'm also doing some work for an Air Force base jet engine testing facility.

Real Engineering Continued From Page 1

sensors which detect the sheets when they are in their start and stop positions. I had to develop drawings for this project as well. These drawings gave all dimensional information and building instructions necessary for manufacturing the needed parts. Also featured with these drawings were 3D models to aid in assembly. In addition, I pre-wired the main electrical panel for ease and efficiency of installment. It was my duty to test all the com-

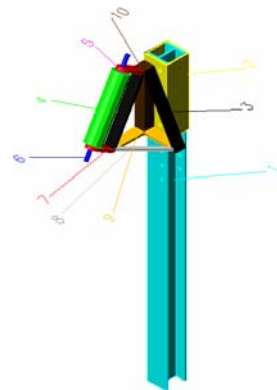
ponents as if they were already installed on the line of production, so that I had time to troubleshoot any problems, allowing the system to be installed with ease and limited problems.

My concern in preparing to be an engineer was work experience. My father and his wife are both engineers; consequently, they say that most graduating engineers lack work experience which is vital to be competitive in the field. I have used my intern-

ships to gain this experience as well as networking. Having contacts in the field makes it easy to obtain a job quickly after graduation. Academics is helpful but nothing is as beneficial as working in the field. I have been fortunate to have this opportunity, and I appreciate the fact that DACC recognizes the importance of internships and encourages their students to locate such experiences, and will even help students to find them.

Industry Tour: Thyssen Krupp

DACC students toured ThyssenKrupp-Presta Division this last year. This tour was a result of DACC internship recruitment. Krupp offered DACC engineering students three new internships that started at the beginning of the year. ThyssenKrupp is an international group with high levels of capability in three main areas: steel, capital goods, and services. ThyssenKrupp holds the top three market positions in most of its activities. The Presta Division in Danville produces cam shafts and u-joints for leading automobile companies. Students visited with working engineers and toured both the cold press and automation components of the plant. Internship opportunities included AutoCAD, High Voltage Electrical, and "people" engineering. Each student worked directly with an engineer.



Example AutoCad: This is the guide for the roller bed that keeps the 40th sheets properly aligned.



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From Mexico to DACC

Jose Grajales is originally from Mexico. He grew up on a farm and became fascinated at how the world worked. At an early age, he developed a passion for learning. After serving in the Mexican military and marrying, he decided to move to the United States to pursue his dream of working as a chemical engineer. DACC is where he begins that dream.

Matt Ellermets Continued From Page 2

field of study. I have interned with Time-o-matic, a company which produces LED time/temp units and LED message centers. Those of us who live in Danville are familiar with the newer LED signs located at Schlarman, the Village Mall, the David S. Palmer Arena, and many other locations. Part of my job is to perform final hookup and assembly of the signs, and to test them before they ship out. When they have problems, I take care of the necessary modifications or replacements. Also, I test and repair individual components.

Attending DACC, saving money, and gaining very valuable experience in real-world applications is a fantastic idea. Most future employers are more interested in proven real-world productivity in their engineers than in theoretical ability represented by a diploma. DACC's support and assistance to obtain internships offers the opportunities to gain those skills as well as the academics.

DACC Associate in Engineering Science Baccalaureate Transfer Program

The Associate Engineering Program provides basic training in the foundational building blocks for engineering: physics and mathematics. Studies are conducted in general areas and are a preparation for a number of fields of advanced specialized study. This program is designed as a transfer program and completion of the program provides flexibility to transfer to any desired university. For more information about the program visit <http://www.dacc.edu/catalog/aes.html>.

Girl Power Continued From Page 2

the DACC engineering program. She was originally an art major who realized that engineering offered her more opportunities. She was accepted into the Engineers for Tomorrow (EFT) program and is attending University of Illinois. The EFT program will pay 1/3 of her tuition. In return, after graduating she will return to Danville to work for local companies for two years. While attending DACC, she interned at KIK.

DACC alumnus Mansi Naik graduated from the University of Illinois Urbana-Champaign in

Electrical Engineering in 2006. Because she enjoyed mathematics and physics, she chose engineering as a career. Electrical became her focus because she liked to play with circuit stuff. She attended DACC because of the price, location, and financial aid. By attending DACC, Mansi landed an internship with Time-O-Matic, and learned the value of hands on experience. She was involved in a few organizations on campus like Indian Student Association and ASHA. Mansi loves swimming, playing cards,

and hanging out with family and friends. When asked how she felt about being a girl in a man's field she responded, "I have never felt uncomfortable as the only girl in engineering at DACC, and besides, there are only a few girls in engineering at U of I. It made me stronger. It's a feeling of being unique. We should never feel nervous about being a little different but try to think of it as a challenge to prove that you can succeed in this major because you are a woman."

Accepting Challenges: Ryan Carlton

As a child, I began taking taekwondo lessons at the local fitness center. The first time I entered those doors, the simplest moves were difficult; however, with perseverance and practice, I achieved far more than I had ever dreamed. Later, I faced yet another challenge but this time it was personal. I was gradually losing my hearing, and the problem required me to wear hearing aids. When my hearing first began to fail, I attended the MATS program at East Park, an accelerated program, but instead of transferring into something more slowly paced so that my hearing loss would not affect my progress, I willed myself to try harder—I made up for my lack of hearing with more dedicated listening. Every year my hearing worsens, and every year, I work a little bit harder. Just like in taekwondo, living life hearing-impaired is just another tech-

nique to practice and eventually master. When things became difficult, I learned to try harder and to never give up—a fought-for victory is far more rewarding than an easy victory. Thus, as you can imagine, I choose an equally tough major: computer engineering.

From very early on, I have had my sights set on becoming a computer engineer. In school, I paid special attention to programming, math, and physics. In all of these subjects, I have found enjoyment and a hunger to learn more. I continued my education at Danville Area Community College, because the opportunities for internships and smaller class sizes will better prepare me for my engineering future. After I achieve my associate's degree, I

plan to transfer to Bradley University to work towards my bachelor's degree. They also have smaller class sizes and an increased chance of attaining work experience while in college.

I joined the DACC internship program this last year and was recently hired at Krupp Gerlach, a local manufacturing plant, where I actively assisted in the implementation of Six Sigma business strategies—creating a more efficient

workplace while honing skills that will improve my own performance in future ventures. The beauty of my internship is that I gained experience and skills but I also positively affected my future employment and starting salaries.



DACC Engineering Student
Ryan Carlton