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Dear Readers:

Welcome to the Fall/Winter 2010 issue of Nebraska Blueprint, the student magazine of the College of Engineering. My name is Michael McEniry and I am one of the new editors this semester, along with Nate Benes. Nate and I have been writing for the Blueprint for the previous two semesters under editor Brian Neilson. We hope to continue Brian’s commitment to the Blueprint and to bringing readers interesting news and stories about the college.

Through my first semester as editor, I quickly discovered the biggest challenge to the Blueprint magazine: finding students interested in joining. Currently, the Blueprint is in desperate need of writers. We also need someone to fill the role of layout editor. The two most common responses I receive from students when asked if they would be interested in joining are: “I’m not good at writing” or “I hate writing,” or both.

When I joined Nebraska Blueprint, I admit writing was not something I particularly enjoyed. Since joining, I can say my writing has improved, and I feel more confident when writing articles and reports for classes.

Regarding engineering and writing, you could be the brightest, most innovative engineer but if you can’t convey your ideas to others, they are useless. Writing is a critical skill for any engineer and the Blueprint is an excellent opportunity to improve those writing skills.

If you are interested in joining the Blueprint or want more information, send us an e-mail: unmblueprint@gmail.com.

Sincerely,

Michael McEniry
Editor-in-Chief
Early Learning Helps Understand Engineering

BY REBECCA HARTZ

For the past 25 years, Bright Lights has been known around Lincoln, Neb., for their fun and exciting summer camps. These learning adventures use the “hands-on, minds-on” learning technique to immerse young students in the topic of their choice. While most classes are usually centered on one subject, they also offer Career Day Camps that explore an overall profession and the specifics within.

One example is the Engineering Career Day Camp. During this week-long experience, post 6th - 8th graders have an opportunity to see what engineering is about and check out six different branches in this area. While trying out the fields of Civil, Electrical, Industrial, Mechanical, Biological Systems and Computer Engineering, the students learn how to hypothesize and test solutions to problems using current situations.

The camp is taught by Jane Edwards, a Southeast High School ITE teacher, and Charmain Satree, ITE department chair at North Star High School. Working alongside them are students at the UNL College of Engineering. These current students bring a special aspect to the journey of engineering and answer the middle school students’ questions when it comes to classes and the work involved. The presenters also bring in another viewpoint as they widen students’ minds to the world of engineering.

This summer, the students worked with David Hartmann, Math Department chair at Southwest High School, to learn about the big buzz on wind energy. After a presentation on renewable energy, they were given a chance to create a model wind turbine and explore the possibilities using...
this technology. To understand the workings of the turbine, they were able to tweak the blades of the fans to determine the maximum amount of energy they could put out.

The other activity the students were involved with concerned the current oil spill in the Gulf. The teachers and assistants worked together to invent a tiny version of the oil spill for the students. Once they were given some background information, they set to work. They were given tools to find the best way to get rid of the oil most effectively and quickly. With cotton balls and other utensils, the students worked hard to clean up the spills and get a glimpse of what issues current engineers are working with.

Through this experience, Edwards and Satree hope to brighten the students’ career perspectives by showing them the detailed work in engineering. They want them to take away a new way of thinking when it comes to putting things together and a confidence in their abilities. Their activities connect as engineering in the students’ eyes and help them live it, instead of just seeing the work. The students minds are opened to a new view of a world we hope to one day see them in.
The Renovation of Whittier Hall

BY NATE BENES

Just one block North of the intersection of N Antelope Valley Parkway and Vine St., the once dormant Whittier Junior High School has seen new life after the completion of a $23.8 million dollar remodel. Since its construction in 1923, the building has seen several occupants. Beginning as a Junior High School in the Lincoln Public Schools district, it was closed in March of 1977. The building lay dormant and unoccupied for several years, leaving Whittier alums nervous about the outcome of their beloved alma mater. Finally, the University of Nebraska Foundation purchased the building from the Lincoln school board in 1983, using it for storage and even using it to host roller hockey games.

The Whittier Building re-opened during the summer of 2010. Students were surprised to find that beneath its historical façade, the building is an example of modern technology and best practices. In fact, the building is being hailed as an example of sustainable building practices and plays host to several UNL firsts. The remodel incorporated guidelines suggested by the U.S. Green Building Council’s Leadership in Energy and Environmental Design.

Building heating and cooling is supplemented by a ground-coupled heat pump. This pump works by circulating water through a loop field behind the building. The ambient temperature of the earth doesn’t change much between seasons and provides a source of cooling during the summer months and heat throughout the winter months. Whittier Hall is the first building on either city or east campus to implement this energy-saving technology.

Whittier Hall also attributes some of its electrical savings to the...
widespread use of LED lighting in place of the traditional incandescent fixtures. LEDs, or Light Emitting Diodes, are smaller, use less power, and dissipate less heat than their incandescent equivalents. Another innovation is the use of heated floors. The floors provide an easy way to discharge even heat throughout a space.

Another first at Whittier Hall is UNL Facilities’ deployment of an “Energy Dashboard”.

Energy Management and Control System, which monitors buildings across both campuses.

Historical preservation also won out with the remodel of Whittier. The now 88-year-old building still retains the appearance of the original despite the thorough gutting and redesign of its mechanical and electrical systems.

Several departments were relocated to the new space. Among them is the Mid-America Transportation Center, the Nebraska Center for Energy Sciences Research – both formerly located in the Scott Engineering Center, and some offices of the Civil Engineering Department – formerly located in second floor Nebraska Hall.

The many design innovations at Whittier Hall have not gone unnoticed. The building earned the 2010 Environmental Leadership award for government buildings. The award is given out annually by the Lincoln-Lancaster County Health Department.

If you’re the curious type, Whittier Hall is a five-minute walk from city campus. It’s located three blocks east along Vine St. at N 22nd.
During a hectic day of classes there is always one place on campus to escape to for focused study: the library. For engineering students and faculty on the UNL City Campus, the location of choice for individual or group study with a wealth of resources on hand is the Engineering Library located on the second and third floors of Nebraska Hall.

The original Engineering Library was functional in the 1940s, and then the collection was moved to Love Library, where it remained for about 30 years. The Board of Regents minutes from the University Archives at Love Library tells the story.

“In the fall of 1969 it was determined that an Engineering Library in Nebraska Hall would be convenient and beneficial to the Engineering College and the University Libraries. This undergraduate library was planned as an extension of Love Library.

The Engineering Library opened in 1971 as phase I of WSEC was completed. The Nebraska Hall Library, located on the 2nd and 3rd floors of Nebraska Hall, provided a collection of about 60,000 books, a “close” reserve book services, and seating for about 1,000 students. This central library complex continues to provide library services to engineering students, staff, faculty and community users.”

Science librarian Dick Voeltz added, “The initial Engineering Library collection came primarily from Love Library and the science and math branches and probably some materials retained from the Undergraduate Library collection. Prior to that, the Engineering Library started out as a reading room in SEC, primarily as a collection of departmental periodicals obtained from the various engineering departments.”

Recently, the Engineering Library underwent more changes. The library was reinvisioned as a gathering place for students to study and use the electronic resources. A thorough deselection process was begun in 2009 so the circulating collection could be consolidated upstairs and the main floor of the library transformed into more useful space for engineering students and faculty. Up to 10 shelves were added after it was determined the structure could handle the additional loads. Study tables were relocated to the main level.

On the main level the reference collection and the shelving for the standards and patent collections were reconfigured into three separate areas. Two microform reader/printers were situated for viewing and printing from microfilm and microfiche, which is stored on the second level.

The deselection and reconfiguration process revealed a large portion of functional space on the main level. Now, just beyond the circulation desk is a well-organized study haven. Large tables are available for groups and carrels are situated for individual study. In the reference section book shelves are strategically intermingled with seating areas. Each shelving section is labeled according to the specific engineering discipline represented.

There is comfortable seating available with popular technical publications for an optional read and even a chess board for
a welcome distraction from a study session. Two self-service photocopying machines are available; both are coin and card fundable. In addition, two laptops are available and may be checked out at the circulation desk.

Two study rooms are available on a first-come basis or they may be reserved at the circulation desk. One room regularly hosts tutoring in electrical engineering and the other is fully equipped for patent search assistance, even boasting a new projector for group presentations or dry runs. Dry-erase boards may be found in each, as well as near the back of the main level.

As the library continues to update its services, Circulation Supervisor Brian Keiser is hard at work to keep students informed. He works with the Engineering Communications office and informs them of updates to the library to post on Facebook and Twitter. A typical update might include notifications of new books available, holiday operating hours or even upcoming presentations hosted within the library. Keiser has also prepared a Citations Manager presentation for engineering students and faculty who want to learn more about this resource. Operations Manager Donna Koch is working with members of the College of Engineering Advisory Board to bring engineering professionals into the library to give presentations about engineering careers.

The Engineering Library has functioned as a Patent and Trademark Depository Library since 1976. Two computers are available for patent and trademark research and for downloading and printing patents available online. One of these is the U.S. Patent and Trademark Office-provided CD-ROM/DVD CASSIS 2 Workstation for multi-point access to patent information, related statistics, and speedy printing of patents from DVDs. The other is a PC for access to patent and trademark information on the USPTO Web site and elsewhere. Librarian Virginia Baldwin, besides possessing a wide range of technical expertise, trains every year with the United States Patent and Trademark Office to stay current and continue to perform advanced patent searches. Available by appointment, she is very willing to assist students and faculty in using the facility’s search tools. She is also easily accessible through instant messaging by Meebo chat at vbaldwinunl. Baldwin has been with the university for 10 years and serves in many capacities. As the Engineering Librarian, she is enthusiastic to let students know, “if they need help, ask for it!”
Interim Dean of the College of Engineering Dr. James O’Hanlon spoke at the first November meeting of the Engineering Student Advisory Board (eSAB) regarding the use of professional fees paid by engineering students.

The two major needs fulfilled through the fees have been staff wages and equipment for undergraduate student labs. In the last few years, the college has needed to hire additional staff to fill various positions.

With the economic downturn in the last two to three years, the university has not received any additional funds from the state to pay for the added staff. As a result, the college increased fees to pay for additional staff members. Dr. O’Hanlon explained that faculty are required to be paid with guaranteed funds, which come from the state. They cannot be paid with student professional fees, which are not guaranteed as student enrollment could drop, causing a drop in funds. Staff, however, are not required to be paid with guaranteed funds, allowing for the use of the professional fees.

According to Dr. O’Hanlon, the staff hired and paid with these funds are varied in their positions with the college, including some temporary positions. Other uses of the fees include student scholarships, fellowships and assistantships, support of student engineering organizations, recruiting for the college and support of departmental programs.

In addition to the fees, Dr. O’Hanlon spoke about the future of the fees as well as the outlook.
on the College of Engineering with the university’s upcoming move to the Big Ten conference.

There are ongoing talks about restructuring the professional fees and converting them into part of students’ tuition bills. This differential tuition would mean that engineering students would pay a higher tuition but would have the ability to allow scholarship money to cover the cost. Currently, scholarship funds cannot be used to cover the professional fees.

Billed separately from tuition, the professional fees first appeared on engineering students’ bills in 2003. Questions and speculation regarding the fees, which increased from $10 in 2005 to $40 in 2006, began in 2008 when IEEE and the Graduate Student Advisory Board began inquiring about the usage of the fees. eSAB became involved soon after and together the three organizations co-authored a letter to the dean’s office requesting an explanation regarding the usage of professional fees in the college. According to Mitch Klein, president of eSAB, the letter was met with little interest by the previous dean of the college.

Regarding the move to the Big Ten, Dr. O’Hanlon explained that in comparison, Nebraska has the smallest engineering college in terms of enrollment. One concern expressed by students in attendance was how Nebraska’s engineering professors compared to engineering professors of other Big Ten institutions in terms of pay.

Compared to other Big Ten universities, Nebraska falls right in the middle of the group in terms of professor pay. It is expected the move to the Big Ten will have very favorable consequences for the UNL College of Engineering.

To illustrate this, Dr. O’Hanlon explained that when Penn State joined the Big Ten in 1991, they had the smallest engineering college of the Big Ten members.

Currently, Penn State is in the middle of the Big Ten schools in terms of engineering student enrollment. UNL’s College of Engineering will have the opportunity to grow and improve significantly in the years following the move to the Big Ten.

Nearly two years later and with an interim dean in the College of Engineering, eSAB’s inquiries have been answered with detailed explanations.

“It was great to see that the dean was interested in hearing about students’ concerns and was willing to answer them,” said Mitch Klein. “We are very excited by the feedback we received from the dean to the students and hope to continue this open line of communication between eSAB and the dean’s office.”

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**Fee Breakdown:**

<table>
<thead>
<tr>
<th>Category</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undergraduate Lab Equipment</td>
<td>$123.77</td>
</tr>
<tr>
<td>Student Scholarships/Assistantships</td>
<td>$52.09</td>
</tr>
<tr>
<td>Support of Departmental Programs</td>
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</tr>
<tr>
<td>Recruiting</td>
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<tr>
<td>Renovations PKI Lab</td>
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</tr>
<tr>
<td>Faculty Wages</td>
<td>$29.99</td>
</tr>
<tr>
<td>Staff Wages &amp; Benefits</td>
<td>$322.12</td>
</tr>
<tr>
<td>Engineers without Borders</td>
<td>$1.50</td>
</tr>
</tbody>
</table>

**Estimate based on student taking 15 credit hours.**

**Above:** A breakdown of per credit hour fees paid per semester in fiscal year 2010. Source: UNL College of Engineering Dean’s Office, Sept. 2010. Based on a 15-credit hour assumption.

**Chart By:** Nate Benes

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Mark your calendars for E-Week 2011: April 11-15!

SOLVING TOMORROW’S PROBLEMS TODAY


Walter Bircher  
(freshman MECH) was awarded one of 650 NSLI-Y Scholarships for 2010-11. The merit-based scholarship covers all program costs for Bircher to study the Turkish language in Turkey in the summer.

Zhiqiang Xie  
(EE graduate student) earned second place in the Best Poster Paper Award at the 28th International Congress on Applications of Lasers & Electro-Optics (ICALEO 2010). EE graduate student Yang Gao received third place in the Student Paper Awards at the same conference.

Matthew Wold  
(AGEN graduate student) is the first and only North American student to receive one of four International Helmut Claas scholarships. Presented by The CLAAS Foundation, this scholarship is awarded on merit. He was flown to Harsewinkel, Germany, the world headquarters for Claas, in October to present his research on an electronically controlled Continuously Variable Transmission he designed as an undergraduate student at North Dakota State University. Wold received third place for his work and a scholarship of 3,000 Euros from The CLAAS Foundation.

Engineering Library  
Continued from page 9

Baldwin offered a few tips for jumpstarting any library research. Library guides are available online for all the engineering disciplines, including physics and construction management. The URLs may be found at http://unl.libguides.com/profile.php?uid=28748. Note the Meebo chat widget on this page and on each guide as well. Other helpful links may be found that address Citation Manager, interlibrary loans or articles available for download. In searching for articles it is recommended to use indexes such as Compendex, Inspec and IEEE Xplore as opposed to Google Scholar.

When asked what students can do to optimize their experience at the library, not only for themselves but for those around them, Baldwin was full of suggestions. Students are encouraged to use locations designed for them. This could be a large table that facilitates a group of eight students who are working together or to spread out large projects. Individual study carrels and soft seating are spread throughout the library. However, should the need arise for a more custom arrangement, students can rearrange furniture, tables and mobile white boards at their convenience. Baldwin also encourages interaction with Engineering Library staff for instruction and guidance in using the virtual library.

Even the traditional “shhhh!” is waived when study groups gather. The library is geared toward accommodating undergraduates even if that means permitting food and drink. It is only asked that any trash be discarded and common courtesy be maintained, even with the flexible noise levels.

The library—a place to research, study or relax—is understandably frequented more during midterms or near the end of the semester when projects are due. On a day-to-day basis, the peak visiting hours are from 11 a.m. to 2 p.m. and then increase again around 5 p.m. Undergraduates, graduates, and faculty are all encouraged to use the suggestion box to contribute their ideas as they continue to enjoy the excellent services of the University of Nebraska-Lincoln Engineering Library.