Calvin’s Women Engineers

Despite small increases in the percentage of women students over the last twenty years, women are still significantly under-represented in engineering, both nationally (approximately 20% women at the BSE level) and at Calvin (approximately 15%). Calvin’s Engineering Department has recently begun to study the factors that contribute to recruiting and retaining more women students and is implementing some new programs to increase the number of women students who complete an engineering degree.

In the fall of 2005, Prof. Jennifer VanAntwerp hosted a dinner for Calvin’s 12 senior female engineering students. The dinner served as a “focus group” for learning more about the experiences of women students in our program. Findings that came out of this meeting included:

- Female engineering students do not feel discriminated against by their fellow students or professors.
- Female students take longer to develop confidence in their ability to succeed in the engineering program. Consistent with national research, the Calvin female student’s self-perception of her engineering abilities is often much lower than her actual performance.
- Female students struggle more with finding the support networks they need to study effectively (they feel more isolated)

Based on this information and outside research, the department has set up a faculty subcommittee to make recommendations for changes in curriculum and student life that would improve retention of current women students. So far, the following initiatives have been implemented:

- A single dorm floor (in Noordeweir) was identified as a cluster spot for female engineering students. Incoming first-year students who indicated a preference for engineering were given the option to live on this floor, near other female majors. This year, 10 of 11 identified students chose this option. However, this turned out to be just over half of the female first-year students. For next year, we will work to better identify the incoming students during the housing assignments time.

First-year engineering students; Sara Evans, Val Horstman, Annie Stegink (sitting), Brooke Buikema, and Nicole Ryan (standing); enjoy the new study room in their dorm.

Inside This Issue

<table>
<thead>
<tr>
<th>Chair’s Corner</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Randy Brouwer’s Sabbatical</td>
<td>3</td>
</tr>
<tr>
<td>2005 Sr. Design Projects</td>
<td>4</td>
</tr>
<tr>
<td>2005-06 Scholarship Awards</td>
<td>8</td>
</tr>
<tr>
<td>New Faculty: Keith Hekman</td>
<td>8</td>
</tr>
<tr>
<td>International Internship News</td>
<td>9</td>
</tr>
<tr>
<td>Study in Germany</td>
<td>9</td>
</tr>
<tr>
<td>Off-Campus Interim Opportunities</td>
<td>10</td>
</tr>
<tr>
<td>Designed for Dry Feet</td>
<td>11</td>
</tr>
<tr>
<td>Christian Engineering Education Conference</td>
<td>11</td>
</tr>
<tr>
<td>Noise and Vibration Research</td>
<td>12</td>
</tr>
</tbody>
</table>
I have been thinking lately about two apparent facts: globalization is here to stay and developing countries educate many more engineers than the U.S., almost 20 fold more. The cost to a business in developing countries is 10-20% of an American engineer. The impact of globalization has already been felt throughout our country in loss of manufacturing jobs to lower cost countries. Nowhere is this more so than in Michigan. We are just beginning to observe professional jobs, particularly in the computer industry, go to low cost countries.

Are all these engineers being educated in developing countries needed for their own industrial development or are there plans to use the surplus to bring American jobs to their countries? With the development of the high speed internet, routine tasks can easily be done elsewhere. In fact, twenty-four hour design is being evaluated by many organizations where design work follows the sun. This faster design work allows products to get to the market faster.

At our fall advisory committee (CEAC) meeting, the term ordinary engineer arose. That is the engineer who does highly structured work, valuable but routine. We agreed that many of these jobs will go to developing countries since our ten fold higher salary can not be justified. The challenge is how do we modify the education of engineers at Calvin so they are not ordinary engineers.

In some ways Calvin is on the forefront. We have significantly more liberal arts courses than the typical engineering program. Liberal arts help the students to think more broadly. Our faculty has significant industrial experience which clearly impact how we teach. We are working hard to give more students an international experience either by courses or via an internship. Our current initiative is an entrepreneurial design center where many students will have the opportunity to work closely with faculty on open-ended new product design projects.

However, these components of our program are not enough. We believe our programs will be very different in a decade. Just how the programs will be different we do not know.

This is where you can help. You are addressing the issues of globalization everyday. What do you wish you had studied, or the engineers working for you had studied in school to be better able to overcome the challenge of globalization?

Let me know your ideas, they are valued. Contact me at wwentzhe@calvin.edu.

Women in Engineering

- First year students are assigned to ENGR 101 sections such that each section has at least three females (or none)

- For the 2005-6 school year, with the backing of an outside donor, a conference room in Noordeweir has been converted into a study room where female students can gather to work on class assignments and socialize. (Male students are welcome to accompany females for project work or study groups, but have not been directly invited.) A female upperclass engineering student tutor/mentor is also available during scheduled hours in the evenings to answer questions that might come up about course work or the engineering program in general.

- Plans are underway for a more formal study of what affects retention of female students at Calvin College Engineering, in particular (as compared to similar information from studies at other schools).

Retention of current women students was the initial goal of the faculty subcommittee. However, in the near future it hopes to expand the scope of its initiatives to address issues related to recruitment of women to Calvin in the first place.

If you are interested in getting involved with our project, please contact Prof. VanAntwerp (jjvanant@calvin.edu) or Prof. Ermer (germer@calvin.edu).
In the summer of 2004, Professor Randy Brouwer left West Michigan with his family on the first leg of a coast-to-coast journey. The first destination was Santa Clara, CA, in the middle of “Silicon Valley.” Sponsored by a Spoelhof Externship Grant, Dr. Brouwer worked at the Intel Corporation from August until December of 2004. He worked with a group that predicts performance for new Itanium 2 processor designs through the use of standardized benchmarks. Members of the group perform multiple executions of these benchmarks for a variety of processor design options. Since the proposed processor designs do not yet exist in hardware, everything is run on a simulator that models the workings of a complete computer system. The project Dr. Brouwer worked on required the setting up and running of an enterprise management software benchmark using several of those in-house tools available at Intel. Through this experience, Randy learned much about the way Intel (and similar companies) makes decisions about future processor designs, how engineers contribute to the process, and some of the software tools to make their work effective. During that short stay, the family enjoyed getting to know people from the area and to see much of the West coast and the beauty of God’s creation.

In December, the Brouwers returned to Grand Rapids for a few days before heading on to the East coast. Dr. Brouwer was awarded an IEEE (Electrical Engineering professional society) Congressional Fellowship for 2005. Supported by Calvin's sabbatical leave program and the fellowship, he worked on Capitol Hill in the office of a Congressman (Rohrabacher – CA 46th). As one of the 4 legislative assistants in the office, he was responsible for managing activities of the office related to science, NASA, and technology.

Unlike his work at Intel Corporation which was focused on one project, his work in the Congressional office was quite varied. The following is a list of some of Randy’s different activities while working for the congressman: meetings with constituents who have concerns or ideas related to science and technology, updating the Congressman on the latest news, working with committee staff to get legislation passed by committees and the House, writing speeches and letters for the Congressman, meeting with the Congressman and industry leaders, test driving a hydrogen-fuel-cell powered vehicle, giving personal tours of the US Capitol building, taking a tour to the top of the dome of the Capitol building, attending conferences, attending briefings by industry, touring NASA facilities, working with NASA officials, meeting Commander Eileen Collins after her successful Space Shuttle flight, and working with lobbyists on various issues. One of the most interesting and challenging tasks was work on legislation related to NASA, Russia, and the proliferation of nuclear technology to Iran.

The year was an incredible learning experience for Dr. Brouwer and his family. There is a great need for scientists and engineers, and especially Reformed-Christian ones, to be engaged in public policy. Having been strongly encouraged by Cong. Vern Ehlers (MI 3rd) to become involved in public policy, Randy would also encourage other engineers and scientists to seek opportunities to serve God through public policy work.
Team 1: The Knight Watchmen
Andrew Tazelaar, Derek Wykstra, Jeff Shumate, Brian Netz

The project goal for the Knight Watchmen was to develop a device for use in gardens and yards that will deter deer and other animals from eating and destroying plants and flowers. The Vegetation Vanguard, or “VV”, will operate using a web camera that will track the motion of the animals and direct a stream of water at them with the intent of driving the animal away from the protected area. It operates with a regular garden hose and household PC and can be set to water your lawn in a secondary mode. Given the projectile nature of the project, the VV was designed with safety as a key factor. The team's end product was a working prototype of the VV and plans for a production model.

Team 2: Precision Sound Input
Andy Wallner, Nsimah Okonna, Patrick Avoke, Nate Haveman

This team consisted of four electrical engineers who shared a common interest in audio processing. Their project goal was the design of a portable audio interface device. Such a product lets people connect analog audio sources like microphones or electronic musical instruments to a digital storage device like a USB hard disk or mp3 player. This functionality gives the ability to easily create CD-quality digital recordings without a personal computer or expensive professional audio equipment. The end product delivers exceptional audio quality through an affordable, user-friendly device, constructed with low power components and is powered with a rechargeable battery system.

Team 3: Automated Designated Driver
Matt Husson, Nate Studer, Brian Bouma, Dan Russcher, Paul Bakker

Team Automated Designated Driver (ADD) created a vehicle capable of competing in the Intelligent Ground Vehicle Competition. The competition consists of three separate yet interrelated competitions. The first is an autonomous challenge in which the team's vehicle navigates around an outdoor obstacle course, perceiving obstacles and avoiding them in real time. The second is a navigation challenge where the vehicle autonomously travels from a home base to a number of way-points using coordinates of these points and avoiding any obstacles in its path. A design competition completes the event in which teams give an oral and written presentation of their design.

Team 4: Bio Architecture
David Allen, Chris Wieshan, Jeremy Hanson, Joshua Lester

In New Mexico, a type of energy efficient home is being constructed where the insulation consists of recycled tires filled with soil. The challenge with building these homes was that filling a tire with soil to the required density took two people approximately 30 minutes. A full tire weighs roughly 350 lbs and about 1,200 tires are required to build a three bedroom home making construction very labor intensive. The team goals were to build a machine that reduced the amount of time to fill a tire to less than 10 minutes, and that the machine be lightweight and compact. Through the construction of these homes the team not only promoted environmental stewardship, but also raised the standard of living for people living in this community.

Team 5: HEXFIRE
Andy Wermel, Josh Blocker, Kurt Koubal, Dawn Svenkeson

This team worked in conjunction with Opsci, Inc. to create a lighting system for machine vision cameras. The lighting system incorporates LED technology to illuminate the focal point of the camera. Currently, lighting systems are not able to adjust to different lighting requirements, necessitating several different lighting devices. The team’s HEXFIRE device is adjustable to allow for varying lighting requirements. It was the team’s hope that HEXFIRE would be capable of taking over the functions of several lighting systems so that only this one unit would be to fulfill all of a company’s lighting needs.

~ Continued on page 5
Team 6: The Bobbers
Tom Van Der Puy, Thomas Totoe, Andy Van Noord, Tunde Cole

The goal of this project was to harness the motion of the waves into useful energy, in particular to pump water. The team built a wave-powered water pump, designed to tap the continuous wave action of large bodies of water. This device demonstrates that wave energy can be harnessed with minimal invasion of the ecosystem and provides substantial benefits to the user. This pump can be used to pump water to fill a decorative pond or a water reservoir. It can also be used for irrigation.

Team 7: Aim to P.L.E.A.S.E.
Sarah Chandrasekar; Eddie Lucas, Peter Anjorin, Dan Kuiper

In conjunction with Naake Motorsports, these students designed a machine that will fill a QA1 shock absorber with shock fluid for applications on race vehicles. The machine removed all air from the shock absorber by creating a vacuum on the shock body and shock fluid before putting air into the shock. With an absence of air in the shock absorber, the response to internal changes improves considerably. The shock will also reduce hysteresis found in the shock through the same motion. This machine is designed for use on 12 shocks a day and can be taken to the race track for team use.

Team 8: Papa Wheelie
Ryan Van Drunnen, Jason Fliestra, Ryan DeWall, Chris Van Roekel

The goal of this project was to design an inexpensive, all-terrain wheelchair for Wheels for the World that could be manufactured in the United States and sent abroad to developing countries. If accepted by Wheels for the World, this product could be sent to many different countries for use. This design required thinking through the variety of situations a wheelchair bound person might encounter. The team built a wheelchair that will remain intact and stable under all conditions while remaining comfortable for the user.

Team 9: Addition Ambition
Rama Suparta, Kevin Koning, Mike De Jong, Mike Kooy

The team members of Addition Ambition worked with Dutton Christian School to design an addition planned for their elementary school. Goals for the addition included an efficient and cost effective design that met the needs of students and teachers, maintaining the ability to be modified easily for future needs. Addition Ambition created a set of construction documents including structural drawings, containing foundation, masonry, and roof designs, as well as basic architectural, mechanical and electrical drawings. The team also created promotional materials for the school addition to support funding from the community.

Team 10: The Sky’s the Limit
Aaron Buys, John VanderWeide, Llian Breen

This team was comprised of two mechanical concentration and one electrical concentration engineer. The project was to design and prototype an instrument to measure radiation from the surface of the earth. The instrument is called an active cavity radiometer (ACR) and measures radiation through active temperature control of a cavity. The ACR was designed to fly on a balloon at the top of the atmosphere (30 – 40 km) and send radiation measurements back down to earth via a radio frequency signal. This project was a continuation of last year’s project, “AIR Up There,” and was funded in part by the NASA Institute for Advanced Concepts.

~ Continued on page 6
**Team 11: Sow What?**
Brian Katerberg, Kristin De Groot, Andy Vander Moren, Dan Schrik

This team worked in conjunction with CRWRC and designed a device that processes amaranth seed for farmers in Kenya, using a variety of functions to clean the seed. The chosen design was influenced by both economical and ethical factors. Material costs needed to be minimized and differences in culture resulted in the use of a hand crank over an engine to power the machine. All parts were machined in Hudsonville, MI by a team of volunteer craftsmen from Hillcrest CRC. The parts were then shipped to Kenya as a kit which included an assembly/instruction manual.

**Team 12: Keep it Cambodian**
Aaron Svacha, Matt Vredevoogd, Nate Voigt, Michael Bratt

Keep it Cambodian, was comprised of two civil and two mechanical concentration engineers. Their project involved designing a system of locks for future use in Siem Reap, Cambodia. The system allowed boats to travel between the Siem Reap River and the Tonle Sap Lake. Some of the challenges the team encountered involved obtaining accurate design information from previous lock systems, communication issues with contacts in Cambodia, and modifying the design to keep up with numerous revisions to the city plan. The end result included a set of drawings for each of the components designed and analyzed.

**Team 13: TIREd**
Kevin Palmer, Andrew Huisjen, Terry Austen

“Earthship” houses are an increasingly popular way of building a self sufficient living space. The walls are constructed of scrap truck tires packed firmly with soil to absorb heat during the day and release heat at night.

The goal of Team TIREd was to produce a portable crane capable of lifting a packed tire weighing 300-350 lb to a height of 9 ft. The crane has a 10 ft radius and allows for continuous 360° motion. The entire crane is mounted on a standard 16 ft trailer and has mechanisms to allow for complete removal or folding for ease of travel.

**Team 14: Campamento Shalom**
Lou Davenport, Rebecca Mejia, Laura McWethy, Eric Timmer

This team chose to work in conjunction with Engineering Ministries International in order to aid in the expansion of a Christian camp in Totonicapan, Guatemala. Taking on a portion of the master plan developed for the camp, they designed two buildings: a 44-person dormitory and a family-style home. The team performed structural analysis and design of both buildings. Structural included an earthquake-resistant foundation design, masonry block walls, and roof systems for both buildings. The information was then compiled into construction plans that were comprehensive yet basic enough to be understood by local laborers.

**Team 15: Monsoon Platoon**
Dan Vander Heide, Ben Giudice, Kevin Gritters

Monsoon Platoon’s worked to make the River Siem Reap of Cambodia more navigable, benefiting both the area’s tourism industry while improving the quality of life for the inhabitants of Siem Reap. During the dry season, the river is typically so shallow that only rafts and small boats can navigate it. During the wet season, the river becomes too deep and torrent for any boat to follow a safe and sure course. The team designed a mountain dam and a plan to restore a man-made lake near the temples to store excess water from the rainy season for use in the dry season. In addition, the team designed a new channel extending from the city of Siem Reap into Lake Tonle Sap, south of the city, to create a safe passage for boat traffic.

~ Continued on page 7
Biodegradable plastics are needed in order to reduce the long-term environmental effects of using plastic products. They used newly-developed catalyst technology to design a pilot plant to produce the biodegradable plastic poly (beta-hydroxybutyrate), also referred to as PHB, and determined the economic feasibility of this process. One of their major obstacles was a lack of information on this new catalyst technology which has not been used in many experiments. Process safety was also a concern due to the toxicity of some of the chemicals and the fact that the chemicals react with air and water. At the completion of the designed process, PHB is formed into pellets which can then be thermoformed into consumer products such as plastic tableware.
2005 – 2006 Engineering Scholarship Awards

**AMDG Scholarship**
Atsen Bulus, Gurnee, IL

**James Bosscher Engr. Scholarship**
Corinne Kluge, Ballwin, MO
Christopher Lowell, Irvine, CA
Brian Medema, Everett, WA
Brady Rathburn, Tucson, AZ
Justin Slocum, Trenton, MI
Michael Spee, Olympia, WA
Frederick Thielke, Cacloban City, Philippines
Courtney Traviola, Naperville, IL
Joel Unema, Hudsonville, MI

**Bosscher MSPE Scholarship**
Brooke Buikema, Zeeland, MI

**Bosscher SAE Engineering Scholarship**
Eric Bratt, Durham, NC

**Civil Engineering Scholarship**
Tim Schrotenboer, Cupertino, CA

**Calvin Engineering Scholarship**
Joshua Jarrard, Middlebury, IN

**Calvin Junior Engineering Scholarship**
Nate Barker, Hudsonville, MI

**Daverman Family Scholarship**
Peter Tuuk, Grand Rapids, MI
Daniel Clark, Middletown, MI
Patricia Brinks, Hudsonville, MI
Jeannine Keller, Midland, MI

**Paul W. Newhof Memorial Scholarship**
Catherine Vincent, Seattle, WA
Monika Gunnar, Lucknow, India

**Civil Engineering Scholarship**
Tim Schrotenboer, Cupertino, CA

**Calvin Engineering Scholarship**
Joshua Jarrard, Middlebury, IN

**Calvin Junior Engineering Scholarship**
Nate Barker, Hudsonville, MI

**Daverman Family Scholarship**
Peter Tuuk, Grand Rapids, MI
Daniel Clark, Middletown, MI
Patricia Brinks, Hudsonville, MI
Jeannine Keller, Midland, MI

**Paul W. Newhof Memorial Scholarship**
Catherine Vincent, Seattle, WA
Monika Gunnar, Lucknow, India

**Brian DeWall Memorial Scholarship**
Daniel Clark, Middletown, MI
Catherine Vincent, Seattle, WA

**Elenbaas Family Scholarship**
Jon Bush, Grandville, MI
Danielle Van Hal, Kenmore, WA

**Burke E. Porter Scholarship**
David Qu, The Peoples Republic of China

**Reimink, Prein & Newhof Scholarship**
Kevin Gritters, Hudsonville, MI
Andrew Reimink, Jenison, MI

**Pfizer Scholarship**
Barbara Frazier, Placerville, CA
Michael Heslinga, Grand Rapids, MI

New Faculty: Keith Hekman

Keith A. Hekman is the newest addition to the engineering department faculty, teaching classes both in the Electrical and Mechanical Concentrations. He arrived at Calvin for the spring semester and is in a tenure track faculty position. Keith graduated from Calvin College with a BS in Engineering (mechanical concentration) in 1992. He completed his MS in Mechanical Engineering from the Georgia Institute of Technology in 1994 and his PhD in Mechanical Engineering in 1997. Keith was the first Calvin Engineering alumnus to be admitted into Georgia Tech, his performance paved the way for other Calvin grads applying and attending GT.

For the past 8 years Keith has been teaching in the Mechanical Engineering Department at the American University in Cairo (Egypt) in the areas of: Dynamics, Vibrations, Automatic Control, Mechanism Design and Numerical Methods. While teaching at AUC Keith performed research in collaboration with faculty at Georgia Tech in the areas of control in manufacturing processes and command shaping control.

As a Calvin alumnus, Keith appreciated his Christian education that Calvin provided. He is looking forward to teaching at Calvin where he can actively integrate his faith with his teaching. He is excited about the possibilities of encouraging the students to develop their personal faith both inside and outside the classroom.

Keith was born in Grand Rapids (when his father was on a term position teaching at Calvin) but moved to Albuquerque, NM when he was 4 months old. He lived there until attending Calvin.

Keith and his wife Rana are excited about the opportunity that God has provided to move from Egypt to Grand Rapids and join the Calvin community. Keith and Rana have two daughters, Naomi who is 20-months old and Sophia who is 4-months old. The family is glad to be a little closer to their extended family as well.

In addition to spending time with his family, Keith also enjoys traveling and photography. He also plays the guitar and likes leading worship. The family is looking forward to finding a reformed church family where they can worship and serve God with their gifts.
This past summer, three Calvin students participate in our international internship program. Jonathan Bush worked for the pharmaceutical company Boehringer-Ingelheim in Ingelheim Germany. John is a chemical engineering student and he spent eleven weeks working in Boehringer’s Verfahrensentwicklung, or Process Development Lab. Ryan DeWall spent the summer working for automotive supplier TRW in Koblenz, Germany. Ryan is a mechanical engineering student and he worked on improving TRW’s engineering design change process. Clarence Medema spent the summer working as a research assistant for The University of Magdeburg in Magdeburg Germany. Clarence is also a mechanical engineering student. He worked on several projects in the fields of mechanical and bio-medical engineering. On the weekends the students traveled to such places as Switzerland, Paris, Rome, Amsterdam, and many more European places of interest.

Calvin also arranged for two German students, from the University of Bremen, Bremen, Germany, to do internships here in Grand Rapids. Angela Dabercow, a business major, and Christian Eickhorst, an engineering major, worked for the Taylor Company. On the weekends, they experienced their first American baseball game, Ottawa Beach, and Christian learned to play golf.

For all of these students, their summer internships proved to be life changing experiences and will have a very positive impact on their lives as well as their careers. We wish to thank the companies who helped us with these internships and the Calvin German Department who helped us arrange for the student’s visas and work permits.

The Faculty Senate has approved an exciting new Engineering Department Program which will give our students an opportunity to study in Germany for six weeks during the summer of their sophomore year. The students in the program will take German 101 during the spring of their sophomore year instead of the normal Engineering 202, Statics and Dynamics. Then, during the summer, the students will travel to Bremen, Germany; along with a Calvin Engineering Professor, where they will be taught Engineering 202 by the Calvin Professor. While in Germany, the students will also take a second course in the German Language which will be taught by a University of Bremen Professor. For this coming summer we have thirteen students enrolled in the program which will be led by Professor Nielsen.

The main purpose of the program is to help prepare our students to participate in the global economy. This is best done by having our students learn the German language and immersing the students in Germany where they can experience the customs and culture of the German people on a first hand basis. Our students will intermingle with the University of Bremen students during the week and on the weekends, the students and the professor will travel thru out Germany using the rail system. Based on the high level of interest for this program by our students, it is anticipated that this program will be offered on an annual basis.
Off-Campus Interim Opportunities for Engineering Students are Numerous

Where will you be in January of 2007? In the coming year, Calvin's engineering students will have the opportunity to take part in three Interim courses tailored especially to their studies in engineering. Faculty and staff have already begun preparations for Interim courses that will take their students to some of the most diverse settings in the world.

An Interim course set in South Africa will introduce students to a country with a tragic past but also a promising future. This interim is taught by Prof. Matthew Heun of the Engineering department and his wife Prof. Tracy Kuperus of the International Development Studies program. The primary academic objective of this course is to gain firsthand knowledge and understanding of how racial injustice has been encountered in political and industrial contexts. Participants in this Interim will not only read and study South African history, culture, and industrial change - they will also experience South African townships, meet with political leaders from a variety of political parties, and visit gold mines. Students will explore South Africa’s apartheid past, the struggles for and painful miracle of its democratic transition and the political-economy of the mining industry where interactions of politics, business, and race are poignant. Specific on-site visits will include Robben Island, Soweto mining hostels, the University of Cape Town, the Apartheid Museum and much more. This Interim course provides a stimulating mix of exciting travel, discussion, and engaging speakers, but is only offered every two years.

The Interim with Prof. Robert Hoeksema of the Engineering Department along with Prof. Hank Aay of the Geology, Geography and Environmental Studies Department is once again on the schedule for January 2007. With daily field excursions and detailed topographic maps, students traveling to the Netherlands will have the opportunity to study the country’s richly varied and historically layered cultural landscapes. These include centuries old agricultural and town landscapes of Friesland and Groningen, 17th century polder landscapes of Noord Holland, the modern IJsselmeer Polders, the intensive horticultural landscape of the Westland district, new towns, the region of the great rivers, and the industrial landscape of Europoort - the world’s largest harbor. Many of the excursions give special attention to land reclamation and environmental preservation technologies. Students see dwelling mounds over a thousand years old, windmills over 300 years old used to drain, modern pumping facilities used to keep newly reclaimed land dry, modern windmills used to generate electricity and modern water treatment facilities. On the Delta plan excursion, participants see some of the most advanced and truly impressive engineering works ever built to protect the environment of the low lands from storms. This course is only offered every two years as well.

Prof. Ned Nielsen and Prof. Aubrey Sykes are leading “Business & Engineering for the International Market” for 2007. This course is designed for students to prepare for today’s global economy. Engineering design, product development, and product marketing are studied with a focus on the international market. It introduces the student to the nuances of product research and development in the international market, focusing on R&D in Europe. Students will learn how the languages, history, culture, economics, and politics of Europe shape the design process through tours of engineering research facilities (both industrial and academic), tours of manufacturing facilities, as well as seminars and discussion sessions with leading engineers and researchers in Europe. Locales will include Amsterdam, Berlin, Nuremberg, and Paris. Students will keep a daily journal as well as complete study assignments that focus attention on key issues related to the day’s tour.

Betty Bay in South Africa.

Students from 2006 Business and Marketing Interim in the Hague, Netherlands.

David Ritz admiring the old pump screw at the Schermerhoorn windmill museum in the Netherlands.
In 2003 Prof. Hoeksema began work on a book he has had an interest in for years. He has had a sabbatical in the Netherlands and several off-campus interims over the years in the Netherlands and has now been able to publish his work in a book called “Designed for Dry Feet”.

Few countries exist where humans have exerted a greater influence in shaping the landscape than the Netherlands. This book tells the history of flood protection and land reclamation in this Western European country. The Netherlands is located in the lowland delta of three major rivers. Human habitation in areas dominated by soft compressible soils has left 65 percent of the land area below high tide level on the North Sea. Many technologies have been used to protect its inhabitants from floods and to reclaim flooded land. The first chapter of this book provides a complete overview of the history of flood protection and land reclamation from about 500 BC to the present. Subsequent chapters then focus on specific activities or projects. These include simple dwelling mounds first constructed more than two millennia ago, seventeenth century windmill powered lake draining schemes, nineteenth century steam powered drainage activities, and twentieth century land reclamation and flood protection projects. The book also covers the history of water management organizations. Several chapters end with a list of locations to visit for further exploration. These are then organized into six excursions designed for those visiting the Netherlands. The primary value of the book is that it fills in the details of this interesting story of civil engineering technological development. It also allows the reader to learn how other communities have dealt with the problem of lowland delta flooding.

Prof. Hoeksema will be speaking about his work and his book in a seminar co-sponsored by The Engineering and Geology, Geography and Environmental Studies Departments. His book is expected to be available in mid May. We will host a book reception to mark this occasion once we know the actual date. Please feel free to contact the department or check the web-site for more details as they become available. The books will be available for purchase through ASCE and the Calvin Bookstore.

Christian Engineering Education Conference

The 2006 Christian Engineering Education Conference (CEEC) will be held at Olivet Nazarene University, near Chicago, on June 21–23. The two-day conference is focused on educational issues, but is open to all Christian engineers and includes a number of interesting topics such as “Engineering as a Christian Vocation” “Witnessing to the Engineering Profession through Work” and “Sustainable Design.” Calvin’s engineering department is heavily involved with the conference this year. The conference general chair is Professor Steve VanderLeest and the program chair is Professor Gayle Ermer. The conference is held every two years with around 30 to 50 people attending each time, from all parts of the country.

If you would like more information, visit the conference web site, http://engr.calvin.edu/ces/ceec.

Kingdom-Company Engineering!

A world leader in heavy lifting and transportation is seeking sharp civil/structural engineers who are people of faith. This Christian-led company, growing internationally, has a corporate culture and goals that involve giving millions to missions. Field project manager, junior and senior design/field engineer positions and internship openings around the country. Contact William Stearns of The Finishers Project/LeaderCast Placement, William@Finishers.org, 1-479-283-7866.
Each summer Professor DeJong and several students are busy shaking things up in the engineering building - for good reasons. They are developing a new computer program, called GENDAP, to predict the noise and vibration in mechanical systems (cars, planes, ships, buildings, etc.). Gendap uses a Finite Element mesh description of the system, but has its own equations to solve for the noise and vibration. Companies that have supported the work include Westinghouse Marine Division, Ford, General Motors, Northrop Grumman, and Trane.

The work has received recognition from the technical community. A recent paper given at the NVH conference sponsored by the Society of Automotive Engineers was selected for publication in the SAE Transactions. Also, DeJong has been invited to give a paper at the Recent Advances in Structural Dynamics conference to be held this summer in England. Keeping things quiet about their work is not possible any more.