



# ENGINEERING NEWS

## 24 YEARS HAVE BROUGHT A LOT OF CHANGES IN THE DEPARTMENT OF ENGINEERING

By Carl A. Erikson, Jr.



ABOVE: Students walk to and from classes outside of Frey Hall. RIGHT: The 1993 engineering department faculty, from top left: James T. Scroggin, Carl A. Erikson, Jr., Robert Clancy, front row: Timothy Whitmoyer, Harold Underwood, John Meyer



In 1989, James T. Scroggin, chair of the Department of Engineering, hired me to help start a new phase of the engineering program at Messiah. The old program of the curriculum required two years here on the Grantham campus, a summer school program at Temple University and the remaining two years at Messiah's Broad Street campus attending Temple University's engineering courses. The new BSE engineering program would be entirely on the Grantham campus, limited to mechanical and electrical concentrations. A group of 29 first-year students entered the program in August 1989. Engineering classrooms and labs met in Kline Hall of Science for the first two years.

In 1991, Frey Hall opened and became home to the engineering department, along with the business and management department and part of the art department. Our first BSE class graduated in 1993 with

16 students. Their collegiate records were used to obtain the department's original ABET accreditation in 1994. Incoming first-year engineering students now number between 70 and 80, while graduating engineering classes number between 30 and 40 students. The number of engineering department personnel now includes 8 - 9 professors, two paraprofessionals (one mechanical and one electrical), several adjunct faculty when needed and an administrative assistant.

Concentrations have been added over the years and now include computer, biomedical, environmental and, most recently, civil. A particular emphasis in each concentration has been teaching the discipline specific fundamentals and learning to apply those fundamentals from the experience of hands-on projects. Project opportunities have included special course assignments, senior design projects

such as the solar car and solar boat, and a wide range of those currently hosted by the Collaboratory (formerly Dokomoi Ergatai), supported by the Integrated

Projects Curriculum (IPC). Engineering students have been involved in designing, implementing and testing projects all over the world, including Burkina Faso, Haiti, Honduras, Nicaragua, Guatemala, Venezuela and Zimbabwe.

Back in 1989 as Professor Scroggin and I prayed and discussed our goals for Messiah's new BSE program, two goals became evident: 1) to have each incoming student find God's will for his/her life, either as an engineer or in some other profession where God calls and 2) to foster a servant's heart with the talents God has given. With more than 500 engineering graduates of the BSE program, God has used these men and women to meet the physical needs of many people, here and overseas. God has also called at least 14 of our students into full-time ministry to include Engineering Ministries International (EMI), SIM, MCC, Family Life, Forgotten Voices and church pastors. I have been privileged to see these goals fulfilled.

During the 24 years at Messiah College, many positive changes have occurred, and God has certainly blessed this program. What a wonderful experience to have been to be part of it!

## 2012 SCROGGIN AWARD ALUMNI UPDATE

By Erik Hornberger, '12, Engineering (electrical)



I'm currently studying at the University of Kansas, working on my master's and Ph.D. in electrical engineering. My research area—signal processing—was first introduced to me in Professor

Randy Fish's Linear Systems course. Signal processing comes into play in many applications, including weather radar, Wi-Fi, speech recognition, artificial intelligence, audio systems, photo and video editing—and much more; the list is virtually endless. I find signal processing so appealing because the same set of tools can serve to solve wildly dissimilar problems, which leads to some very exciting career and research opportunities.

The research I began working on this January is an application of signal processing in medical imaging. Many speech therapists and neurologists believe that if they could see what our brains do when we form speech, it would be possible to develop more effective treatments for people with traumatic brain injuries or speech impediments. The best way to see

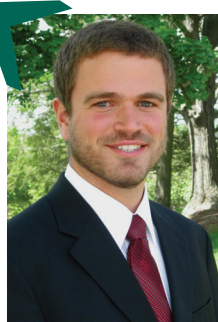
what is happening inside our brains is with an EKG, which is essentially just a bunch of antennas stuck to a helmet that can pinpoint where electrical current is flowing in someone's brain. The problem is that, when we speak, electrical pulses travel through our jaws. These pulses are much stronger than the ones in our brains, so the EKG gets washed out. It's like trying to listen to your voicemail in the middle of a rock concert. Our challenge is to find a way to suppress or filter out the interference from the jaw, so that we can see the brain's activity clearly. I'm really excited to be working on this project. If we're successful, it could unlock new fields of research and lead to new medical treatments.

At KU, I'm part of a fellowship program that provides leadership, project management and international communication training to students who have shown the potential to be leaders in their field. I mention this only because the training that I am getting now is almost identical to the training I received in the Collaboratory. Not only that, but at Messiah, I got to practice and apply those skills on real projects. Here such opportunities are few and far between. I think it's fair to say that being involved in the Collaboratory is I miss the most at Messiah.

---

## 2012 SCROGGIN AWARD ALUMNI UPDATE

By Jonathon Martin, '12, Engineering (electrical & computer)



I recently heard a friend describing his circle of knowledge as ever-expanding to illustrate a quote that has been attributed to Socrates, "The more I learn, the more I learn how little I know."

At times, this realization overwhelms me. I have found myself asking how I ever thought I was up for this challenge of grad school. How could I possibly comprehend all of this material about control of dynamic power systems, random processes and linear programming?

During these moments, I find peace

when I remember the ground I have already covered. I know that this opportunity for grad school came as a gift from God. Considering all the pieces that needed to fit together, I know that He was involved in its orchestration. This thought is both a comfort and an encouragement. I have been prepared for this opportunity through a strong education and know that God will continue to direct my path forward through every situation. My role at this time is to apply my best effort and to keep my heart attentive to the prompting of the Spirit in the midst of all the clutter and distraction of classes and research. May God also remind you of the paths through which He has faithfully brought you when you are feeling overwhelmed.

## SENIOR SNAPSHOT

By Jean Zipagan, '13, Engineering (mechanical)



Jean Zipagan '13 (left) poses with 8-year-old Yempabou as he gets ready to take his new electric tricycle out for a spin during the 2012 J-term trip with The Collaboratory to Mahadaga, Burkina Faso.

I came to college thinking I'd leave knowing all the answers. As the reality of graduation begins to dawn upon us, I realize I've accumulated more questions than answers during my time here. From my experience, our engineering program's greatest strength

**“From my experience, our engineering program’s greatest strength is in equipping students with the ability to think and problem-solve to enable them to tackle the difficult, real-world challenges of our time.”**

is in equipping students with the ability to think and problem-solve to enable them to tackle the difficult, real-world challenges of our time. At the end of the day, I've realized being an engineer is less about having all the answers than it is about learning to ask the right questions. I'd like to thank all my professors and peers for all their support during my time here and for reminding me what an opportunity and a privilege it truly is to be a part of the engineering family at Messiah College. It's been a wonderful four years, but I think I'm just about ready to settle down and get more sleep and enjoy more of this so-called "free time" that I've heard so much about.

# SENIOR SNAPSHOT

By Andrew Dowling, '13, Engineering (electrical & computer)

COURTESY OF MESSIAH COLLEGE PULSE



Andrew Dowling '13 (left) installs solar evaporated tubes on the roof of the Hess/Miller Residence for the solar hot water heaters that were installed last year.

Messiah College was not my first choice of school when I was in high school. I fully intended to go to Virginia Tech as a senior in high school. Either way, I was majoring in electrical engineering. I loved the engineering department at Messiah and I had even attended an engineering weekend. But I didn't want to go to a Christian school. Nobody was going to hire an engineer from a small, Christian, liberal arts school. I'd be better off going to Virginia Tech, a school that had an engineering school.

I was wrong.

Everyone can breathe a sigh of relief. I decided Virginia Tech was too far away from my hometown of Ocean City, N.J. and so I "settled" for Messiah. Except I didn't settle. I thrived. There is no doubt in my mind that I made the right decision. My engineering experience at Messiah has been nothing short of amazing. I've made numerous friends with whom I spend countless hours suffering, I mean, working through homework problems and lab reports. What

I'll remember the most about Messiah's engineering department is the faculty. Many of the professors are more than just teachers to me. They are mentors. They are role models. They are friends. I feel comfortable approaching faculty members about anything. They genuinely care about their students. They not only want us to succeed academically, but they want us to grow up to be the best men and women possible.

Rock on, engineering department. This one is for you. With everything from Professor David Gray's intro class to Professor Randy Fish's daily antics, the engineering department never ceases to disappoint. You've prepared me to go into the world of engineering and conquer any tasks I might encounter. Sure, not everything was perfect, but I'm willing to look past all of that since nobody got mad at me when I repeatedly blew capacitors and transistors in labs. Don't change your process because you earned an A.

**“Many of the professors are more than just teachers to me. They are mentors. They are role models. They are friends.” - Andrew Dowling**



## INVITATION FROM YOUR ENGINEERING NEWS EDITOR



I would like to invite any and all Messiah College engineering alumni to consider submitting an update on news about your work, career, continuing education, travels, family or

other personal status changes that would be of interest to our newsletter readership (including alumni, current and prospective students).

If you would like to submit an update, please send it to me at **HUnderw@messiah.edu** by Sept. 1 for the fall issue or by Feb. 1 for the spring issue. We as a community will enjoy reading your news! Thanks.

*Harold Underwood,  
associate professor of engineering*

The mission of Messiah College is to educate men and women toward maturity of intellect, character and Christian faith in preparation for lives of service, leadership and reconciliation in church and society. Graduates of the engineering program will therefore be technically competent and broadly educated, prepared for interdisciplinary work in the global workplace. The character and conduct of Messiah engineering graduates will be consistent with Christian faith commitments. We accomplish this mission through engineering instruction and experiences, an education in the liberal arts tradition and mentoring relationships with students.

## 2013 ENGINEERING INTEGRATED PROJECTS CURRICULUM PRESENTATIONS

by *Tim Van Dyke, engineering faculty member*



The School of Science, Engineering and Health at Messiah College invites you to the

### 10th Annual Symposium

FRIDAY, MAY 3, 2013

FREY, JORDAN AND KLINE ACADEMIC BUILDINGS

9 a.m. to 6 p.m. Engineering presentations

9 a.m. to noon Computing, mathematics and physics presentations

1 to 6 p.m. Presentations in the fields of biochemistry, biology, chemistry, environmental science, exercise science, molecular biology and nursing



As in past years, the students in the Integrated Projects Curriculum (IPC) will publicly present on their projects at the end of

spring semester. They will be discussing their projects and the work that they have been doing on each project for the past

year or, in many cases, the past two years. These presentations are always an interesting way to find out what the students have been doing, offering a good introduction to engineering and, in particular, Messiah College engineering for anyone who is interested.

This year's presentations will be part of the School of Science, Engineering and Health's Symposium Friday, May 3. All are welcome to attend.

If you are interested in hearing some of these reports, but are unable to attend in person, you may be interested in learning that all of the IPC presentations will be simulcast online. You would be able to hear the presentations, see the slides and even ask the questions of the presenters in real time. For system requirements and more details on the webcast, see the department web page: [messiah.edu/departments/engineering](http://messiah.edu/departments/engineering).