

ANALYTIC THREADS

FALL 2014

News from the department faculty



Angela Hare

In January 2014, Dr. Angela Hare and three students traveled to Burkina Faso for site work as part of their Collaboratory

project. See details in the Collaboratory News section. Dr. Hare was also selected to be a Smith Scholar Intern Mentor for 2014-2015.



Niklas Hellgren

In May 2014, Drs. Niklas Hellgren, a native of Sweden, and his wife Alison Noble (Chemistry and Biochemistry),

led 21 students on a cross-cultural trip to Sweden and Norway. In addition to experiencing the general sights and culture, students visited waste management facilities to learn about sustainability and recycling practices and also a European Union Parliament polling place. They also learned and played traditional Viking games (not NFL sanctioned or affiliated) like varpa and stångstörtning.

Drs. Hellgren and Noble were awarded a Messiah College Cross-Cultural Grant to explore the enhancement of the Scandinavian cross-cultural course by adding Iceland to the current experience. The two of them visited Iceland before returning home from the May trip to Scandinavia.

Abaz Kryemadhi

Dr. Abaz Kryemadhi was awarded a



summer 2014 Visiting Faculty Grant from the U.S. Department of Energy. He and students Matthew Bressler (Physics '16) and Katrina

Schrock (Physics '16) worked in Chicago to prototype a neutron detector for the Cryogenic Dark Matter Search Experiment. The team collaborated with Fermi National Laboratory. This is the third consecutive year in which he received this prestigious grant award.

Dr. Kryemadhi also received a Messiah College Course Development Grant to develop a new course (PHYS 401 – Particle Physics) for the physics degree. This course will be offered for the first time in fall 2014.



Douglas Phillippy

Drs. Doug Phillippy and Brian Swartz (Engineering) were awarded a Messiah College Teaching Enhancement Grant to

develop primer texts for two courses. A primer text is written specifically for students new to the subject matter in a course to prepare them for each topic area. In fall 2014, they will pilot the concept in one engineering course (ENGR 351 – Analysis and Dynamics of Structures) and one mathematics course (MATH 111 – Calculus I).

For the past five summers, Dr. Phillippy has helped to lead a team on a short-term mission trip to Belize. On

these trips, the team stays at Hosanna House, a home for abused children. This home is part of a local ministry, Here's Hope Ministries. Dr. Phillippy's team interacts with the residents of the home, runs a Vacation Bible School for local children, and performs maintenance on some of the buildings at the site (<http://www.hereshopeministries.org/home.html>).



Samuel Wilcock

On Aug. 7, 2013, Dr. Sam Wilcock was an invited panelist at the Joint Statistical Meetings in Montreal, Quebec. "Is the

'World' Ready for a Simulation Approach to Introductory Topics?" was the topic addressed by the panel. In May, he presented at the on-campus workshop, "Universal Design for Learning."

Dr. Wilcock published the following article this past year: Lindquist, E., Foster, D., Wilcock, S., and Erikson, J. (2013), "Rapid Assessment Tools for Conserving Woodland Vernal Pools in the Northern Blue Ridge Mountains," *Northeastern Naturalist*, 20 (3), 397-418 (<http://www.eaglehill.us/NENAonline/articles/NENA-20-3/11-Lindquist.shtml>).

In June, he spent another intense week grading Statistics AP exams. This was his seventh year. Several Messiah alumni joined him in this endeavor.

Retired faculty news



Robert Barrett

Each semester, Professor Robert Barrett teaches one or two laboratory sections of PHYS 201 & 202 – Introductory Physics I & II.

Last fall, Professor Barrett completed his 2,000th kayak trip. Most of his trips are of a ministry nature designed so that others can enjoy God's creation from the perspective of a waterway. He continues to be the Outdoors Club advisor at Messiah College – a position which he has held for more than 19 years.



Gene Chase

Dr. Gene Chase authored an essay reviewing and summarizing "Ideas at the Intersection of Mathematics, Philosophy, and Theology" by Carlos R. Bovell which is a book of

essays on phenomenology, mathematics, and theology. Dr. Chase's essay was published in Journal of the ACMS (Association of Christians in the Mathematical Sciences), 7, 1-8 (http://www.acmsonline.org/journal/2012_2013/Chase2012.pdf).

He continued as a consultant for Symbionyx (<http://symbionyx.com/>), whose WERCware products are being tested by Collaboratory students. WERC is an acronym for Wearable Enabled Remote Co-presence. Among the applications is one that allows employees on the autism spectrum or with post-traumatic stress

disorder to be productive receiving only minimal noninvasive remote help. See the Collaboratory News section for more details.

In spring 2014, Dr. Chase taught MATH 392 – History of Mathematics and directed an independent study in MATH 491 – Philosophy of Mathematics.

Welcome



In fall 2014, Dr. Christine Robinson joins the IMS department as assistant professor of mathematics filling the position vacated by Dr. Christopher Staecker in 2009.

She comes to Messiah

from her position as a postdoctoral fellow at the Einstein Institute of Mathematics at the Hebrew University of Jerusalem. Dr. Robinson completed her Ph.D. in number theory and automorphic forms at the University of Illinois at Chicago in May 2013. She received her M.S. in Mathematics from the same institution and her B.S. in Mathematics from Wheaton College. In summer 2011, Dr. Robinson was part of a research group in arithmetic geometry at Humboldt University in Berlin, Germany. She is a native of Syracuse, N.Y.

In Memory

Retired professor John Seymour died on April 24, 2014 in Denton, Tx., at the age of 85. After retiring from IBM in June 1987, he spent two years teaching computer



science in what was then the Department of Mathematical Sciences at Messiah. Professor Seymour was very physically active. When he joined our department, he was

still recovering from an injury he sustained while body surfing in California. Several present and former Messiah faculty members will testify that Professor Seymour's physical appearance and movement were quite deceptive belying the trouncings inflicted by him in racquetball.

Department news

Physics

The physics (B.S.) program is no longer a split program between Messiah-Grantham and Messiah-Philadelphia. It is now housed completely in Grantham. Currently, three students are enrolled in the B.S. program. The physics (B.A.) and physics with certification (B.A.) programs have always been housed completely in Grantham.

New Address—Reminder

Effective July 1, 2012, Messiah College's mail-receiving post office changed from Grantham to Mechanicsburg. As a result, the address for all IMS Department faculty members is as follows.

Name

One College Avenue, Suite 3041
Mechanicsburg PA 17055-6807

Support opportunities

Your continuing support of Messiah College in all ways is greatly appreciated. With respect to financial support, some of you may wish to target donations to specific projects related to the department. Of course, your gift is doubled when your employer has a matching gift program. Consider a gift to the College that is earmarked as described below. Send your tax-deductible gifts to Office of Development, One College Avenue, Suite 3013, Mechanicsburg, PA 17055-6807.

- To make a donation to the Department of Information and Mathematical Sciences, put 'Info/Math Science Dept.' on the memo line of your check written to 'Messiah College.'

- To support the Collaboratory Education projects, put 'Collab. Education Group' on the memo line of your check.
- If you are interested in contributing to a scholarship for students in the IMS Department, contact the Office of Development. It takes \$25,000 to underwrite (seed) a scholarship.
- If you are interested in contributing to an endowed scholarship chair for faculty members in the IMS Department, contact the Office of Development. It takes \$2 million to underwrite an endowed scholarship chair.

Student news

Honors



Arndt

Billie Arndt '14

(Mathematics with statistics, studio art, and art history minors) graduated with department honors in mathematics. Her project was titled "Correlation:

Beginning History through Development of Function."



Musselman

Matthew Musselman '14

(Computer and information science with computer science and software development concentrations) graduated with department honors in computer science.

His project was titled "Designing a Reporting and Analysis Engine for the Intelligent Water Project (IWP)."



Smith

Rebekah Smith '15

(Computer and information science) was awarded the Crystal Meck Evans Scholarship for the upcoming academic year. This \$1,000 award is given annually to a

female student majoring in one of our CIS fields. Rebekah's academic strength, service to the department, commitment to a career in computer science and cocurricular activities made her a strong candidate for this year's award. She was also last year's recipient.

Summer Activities: Research Experiences for Undergraduates (REU's) and Internships



Chua

Phoebe Chua '16

(Mathematics) participated in an REU in mathematics at The Pennsylvania State University. Her research project involved working in max-plus algebra (<http://www.math.psu.edu/mass/reu/2014/>).



Ritenour

Laura Ritenour '16

(Mathematics/molecular biology) attended the Summer Institute for Training in Biostatistics (SIBS) at the University of Pittsburgh (www.publichealth.pitt.edu/biostatistics/research-and-practice/sibs).

Class of 2014: Employment and Education Placements (to date)

Billie Arndt (Mathematics with statistics, studio art, and art history minors): pursuing a master's in medical statistics at University of Leicester in Leicester, England



Boyle

Meghan Boyle (Mathematics with statistics and business administration minors): pursuing a master's in biostatistics at Georgia State University



deGruchy

Avery deGruchy (Computer and information science with computer science and software development concentrations): employed as an intelligent water project specialist by the Collaboratory for Strategic Partnerships and Applied Research at Messiah College, Mechanicsburg, Pa.



Demmer

Scott Demmer (Mathematics): employed as a project manager by Epic Systems, a health care information technology company in Verona, Wisc.



Jablonski

Kathryn Jablonski (Mathematics with a statistics minor): employed as a report writer by Pennsylvania Higher Education Assistance Agency in Harrisburg, Pa.



Kang

Ha Ram Kang (Mathematics with certification): employed as a mathematics tutor by Selahart Institute in Lancaster, Pa.



Kantner

Zachary Kantner (Business information systems): employed as a service desk analyst by Distributed Systems Services in Wyomissing, Pa.



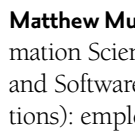
Kennedy

Jonathan Kennedy (Computer and information science with computer science and software development concentrations): employed as a junior .NET developer by Computer Aid in Harrisburg, Pa.



Moyer

Gregory Moyer (Computer & Information Science with Business Information Systems and Web Management concentrations): employed as an Applications Developer by Candoris Technologies in Annville, Pa.



Musselman

Matthew Musselman (Computer & Information Science with Computer Science and Software Development concentrations): employed as a Junior Software Developer by SimVentions, Inc. in Fredericksburg, Va.



Myers

Aaron Myers (Mathematics with certification): employed as a high school mathematics teacher by Bayside High School in Virginia Beach, Va.



Olchewsky

Kevin Olchewsky (Business information systems): employed as a business programmer analyst by Martin's Famous Pastry Shoppe in Chambersburg, Pa.



Sheeler

Benjamin Sheeler (Computer and information science with business information systems and software development concentrations): employed as a software developer by Computer Aid in Harrisburg, Pa.



Sprengle

Jacob Sprengle (Mathematics with certification): pursuing a master's in higher education at Messiah College and employed as graduate assistant coach by Messiah College baseball



Tansey

Meaghan Tansey (Mathematics with certification): employed as a high school mathematics teacher by Dauphin County Technical School in Harrisburg, Pa.



Waidelich

Gregory Waidelich (Mathematics with certification): employed as a high school mathematics teacher by Clearfield High School in Clearfield, Pa.



Rebekah Curtis '16 (math with certification) in the Gobila village school in Burkina Faso, West Africa in January.

Classes of 2006 and 2007: The Rest of the Story

Students in our department, **Brian Bargh '07** (Mathematics), **John Chase '06** (Mathematics with certification), and **Matthew Wright '06** (Mathematics) solved the Icosahedron Coloring Problem. Their solution incorporated concepts from basic geometry, group theory and combinatorics. It was published in the April 2014 edition of *Math Horizons*. (Mathematics and mathematics with certification alumni may recall receiving *Math Horizons* as students courtesy of our department.) Here are the bibliographic details: "Colorful Symmetries," *Math Horizons*, 21 (4), 14-17 (<http://www.jstor.org/discover/10.4169/mathhorizons.21.4.14?uid=29403&uid=3739864&uid=2&uid=3&uid=29402&uid=67&uid=62&uid=3739256&sid=21104454542073>).

Collaboratory projects

Department faculty and students have been heavily involved in projects within the Collaboratory for Strategic Partnerships and Applied Research (messiah.edu/collaboratory/).

Yako Education Project



Curtis

The ongoing Collaboratory Education Group work in Burkina Faso, West Africa continued this year with a new project: the Yako Education Project (YEP). In January, three students and

Dr. Hare served as consultants and observers in the Gobila and Wendkingo schools operated by Burkina Faso Outreach (<http://bfoafrica.org/>). In student-led training meetings with local teachers, the school staff learned how to teach essay writing, abstract thinking skills and improve spelling proficiency, particularly for 5th grade children. Rebekah Curtis '16 (Mathematics with certification) was one of these students, and for 2014-2015 she was chosen to be a Smith Scholar Intern. With this paid internship, she will be working with Dr. Hare to produce a French, Christian mathematics primer for BFO schools in the greater Yako region.

Artificial Neural Network Project



Clemens

Dr. Chase advised Collaboratory student Chad Clemens (Engineering '14). Chad's project was to build an automated real-time system capable of helping a job coach distinguish a worker's

positive and negative stress on the job. Before Dr. Chase became involved, Chad had tried unsuccessfully to use galvanic skin response (GSR), as polygraphs (lie detectors) do. Dr. Chase suggested using voice, and beginning with an easier contrast for testing purposes, namely to distinguish between male and female voices. Chad trained an artificial neural network (ANN) to input a frequency analysis of voices and output the gender of the speaker. Chad's system correctly identified the gender of the speaker 95% of the time. Future Collaboratory work will first train the ANN on pre-recorded voice samples with known positive and negative stress; and second, combine the results with GSR on live subjects in real time to increase predictive accuracy.



Above: Dr. Rohrbaugh teaches CIS students.
 Top right: David Janczyk '12 analyzes data while working on a project for Daybreak Church.
 Right: Matthew Hoover '12 and Matthew Gusick '13 work on a project for the Agapé Center.



Future events

Homecoming “+/- 3 Breakfast”

Saturday, Oct. 18, 2014

All 2012, 2013 and 2014 IMS department graduates are invited to brunch at Brothers Restaurant from 9-11 a.m. during Homecoming on Sept. 18. Department students in their 2nd, 3rd and 4th years will also be invited. Email our administrative assistant, Jean McCauslin (JMcCausl@messiah.edu) by Oct. 10 if you would like to attend.

Alumni mathematics teacher dinner

Monday, Nov. 17, 2014

Each fall, our MATH 407 (Professional Issues in Secondary Mathematics Education) class of current student teachers invites alumni who are middle or high school mathematics teachers to join them for dinner. They are very interested in hearing your advice for new teachers, how to find a good job and how to be an effective and sane teacher of adolescents. If you are a secondary teacher of mathematics, computing, statistics or physics and would like to reserve a place, please email Dr. Hare (ahare@messiah.edu) by

Nov. 10. The dinner will be held from 6-7 p.m. It is free, and the conversation is friendly and helpful.

School of Science, Engineering and Health 12th Annual Symposium

Friday, May 1, 2015

Relatively recent alumni are familiar with MEB Student Scholars' Expo (formerly MEB Scholarship Day) through attendance and participation as students. However, most of you have not had the opportunity to experience one of these events. This event is now called School of Science, Engineering and Health Annual Symposium. If you live within driving distance of the College, we encourage you to visit this symposium which is always held on the last Friday of the spring term and features student (mostly) and faculty presentations. There is no registration

fee and snack breaks are provided. For details including abstracts, check the SEH School website in spring 2015 (messiah.edu/SEH/symposium).

Request for Internship Opportunities

Does your employer hire interns in a mathematics-related area such as actuarial science, statistics or finance? Our mathematics majors often pursue minors in business, economics or statistics and are seeking internships in their third and fourth years. Please let the department know of such opportunities by emailing Dr. Wilcock (swilcock@messiah.edu). Even if you live far from Messiah, we may have a student from a nearby hometown interested in a summer internship.



DEPARTMENT OF INFORMATION
AND MATHEMATICAL SCIENCES

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ANALYTIC THREADS

Analytic Threads is the annual newsletter of the Department of Information and Mathematical Sciences (IMS) at Messiah College. It is sent annually to alumni and is also available electronically at the department's website, messiah.edu/departments/mathsci.

Parting Thoughts

We hope things are going well for you and your families. We enjoy receiving updates and having you visit us at Messiah. However, we will generally not publish your updates. Since your circle of connections at Messiah College was bigger than the Department of Information and Mathematical Sciences, we encourage you to send the updates that you want to be published to the Class Notes section of *The Bridge*, the College's magazine for alumni, parents and friends (messiah.edu/alumni/sendnews).

To update your email address, please email our administrative assistant Jean McCauslin (JMcCausl@messiah.edu).

Editor: Dr. Marlin Eby (Eby@messiah.edu)

Another Opportunity

Adjunct Teaching at Messiah

Are you or someone you know interested in teaching mathematics, computer science, information science or physics at Messiah College? Interested persons with at least a master's degree in a related field are encouraged to send their resume and application (messiah.edu/faculty/application) to Dr. Hare at One College Avenue, Suite 3041, Mechanicsburg PA 17055-6807. The department often needs part-time adjunct instructors to teach general education courses, and we welcome applications from alumni and their friends and family.