Marlin Eby
On July 19, 2014, Dr. Marlin Eby and his wife Julie welcomed a son into their family when Andrew Todd married their daughter Heather. They gained another daughter when Wendy Fureman married their son Matthew on Jan. 30, 2015.

Matthew Farrar
Congratulations to Dr. Matthew Farrar (incoming Physics professor) and Dr. Emily Farrar (incoming engineering professor) on the birth of their first child, Clara Rose, on Feb. 11, 2015.


Angela Hare
On Feb. 13, 2015, Dr. Angela Hare became Interim Dean of the School of Science, Engineering and Health (SEH). She will serve in this position through the 2015-2016 school year. She replaced Dr. Ray Norman who stepped down to become director for faith leadership in water, sanitation and hygiene for World Vision International.

In January 2016, Dr. Hare will lead a Collaboratory team of four students, including Mathematics-with-Certification seniors Rebekah Curtis, Victoria Dix and Jessica Martin to Burkina Faso to work on the Yako Education Project. See details on this project in the Collaboratory news section.

Robert Kilmer
Dr. Bob Kilmer attended the International Conference on Computing and Missions in Warrenton, Missouri from June 16-20, 2014. He presented “Enhancing an Online Quantitative Research Course through Increased Interaction among Faculty and Students” at the 44th Annual Conference of the International Society for Exploring Teaching and Learning held in Denver, Colorado from Oct. 16-18, 2014.

Dr. Kilmer traveled to Montrouis, Haiti from March 14-22, 2015 with Life Connection Missions. There he taught 14 Haitian business administration students in classes of operations management, decision making and descriptive statistics. (See the photo on page 5.)

Abaz Kryemadhi
Congratulations to Dr. Abaz Kryemadhi on his promotion to associate professor of physics.


Philosophy professor Dr. Robin Collins, with Dr. Kryemadhi as co-investigator, received a $54,000 grant from the John Templeton Foundation Providence and Chance initiative to work on the project “Discoverability and Providence.” A major part of this project seeks to quantitatively determine the degree to which the values of the fundamental parameters of physics are optimal for scientific discovery. The results are that they appear extraordinarily fine-tuned for this purpose.

Brian Nejmeh
Professor Brian Nejmeh and Dr. Vince LaFrance (management and business) led a January 2015 cross-cultural trip to Costa Rica.

Professor Nejmeh was involved in two Collaboratory projects. He continued to work with students in CIS 412 (Systems Analysis and Design Applications) on the Intelligent Water Project, improving mobile app functionality, adding an alert feature and improving project documentation. He also formed a new partnership with Cure International to incorporate a ministry module for a medical records system.
Congratulations to Dr. David Owen and his wife Gretta on the birth of their daughter, Eva Hope, on Sept. 11, 2014. She joins brothers Gareth (6) and Eliot (2).

Dr. Owen is continuing work on a project integrating the universal document converter Pandoc (pandoc.org), the generic syntax highlighter Pygments (pygments.org), and the learning management system Canvas (canvaslms.com).

On Aug. 2, 2014, Dr. Doug Phillippy and his wife Deb welcomed a son into their family when Taylor Kincer (Mathematics-with-Certificate ’14) married their daughter Lauren.

Dr. Phillippy published the following paper this past year: Phillippy, D. (2015), “A Pranalogical Approach to Faith-Integration with Students,” Perspectives on Science and Christian Faith, 67 (2), 89-99. He presented “Preparing Students to Read a Calculus Textbook” at the 20th Biennial Conference of the Association of Christians in the Mathematical Sciences held at Redeemer University College in Ancaster, Ontario from May 27-30, 2015. This past year, Dr. Phillippy began to serve as a Collaboratory advisor for the Biodiesel Project team spending most of the year getting up to speed on the goals and objectives of the team.

Dr. Christine Robinson was competitively selected for participation in the Park City Math Institute, sponsored by the Institute of Advanced Studies in Princeton, New Jersey. She spent three weeks in July 2015 in Salt Lake City, Utah studying and researching the geometry of moduli spaces and representation theory.


Dr. Lamarr Widmer continued his Collaboratory work and traveled to Ghana, West Africa from July 12-26 as part of an Africa WASH (Water, Sanitation, and Hygiene) and Disabilities Project team.

Congratulations to Dr. Sam Wilcock and his wife Joy on the birth of their daughter Prisca Jane on May 26, 2015. She joins sisters Abigail (9) and Naomi (7) and brothers Jaden (8) and Solomon (3).


Dr. Wilcock was a judge for Moody’s Mega Math (M3) Challenge – 2014 and 2015. This is a mathematical modeling contest for teams of high school students organized by the Society for Industrial and Applied Mathematics (SIAM) and sponsored by The Moody’s Foundation.


This past year, Dr. Chase advised the WERCware (Wearable Enabled Remote Co-presence) Project team in the Collaboratory on the use of artificial neural networks. See the 2014 issue of Analytic Threads for more details about WERCware.

Below: An artificial neural network can be trained to recognize when a client is stressed or unstressed by voice, by galvanic skin response, or by a combination of the two.
Welcome

Matthew Farrar

In fall 2015, Dr. Matt Farrar will join the Department of Mathematics, Physics and Statistics as assistant professor of physics. He comes to Messiah from his position as postdoctoral associate in the Department of Neurobiology and Behavior at Cornell University. During the past year, he published an article on blood flow patterns in the spinal cord, which may provide insights into mechanisms of spinal cord injury and chronic problems such as spinal stenosis (the narrowing of the spinal column). He is currently in the writing phase of work on the topology of the noradrenergic system of the brain, a key player in mental health issues including depression and anxiety. The tail end of this project also involved the construction of a laser sheet microscope capable of imaging the entire zebrafish brain with cellular-level resolution in approximately one second.

Dr. Farrar was awarded his M.S. and Ph.D. in physics at Cornell University in 2010 and 2012. He received his B.Sc. in physics from McMaster University in Hamilton, Ontario in 2007. He is a native of Hamilton.

Dr. Farrar’s wife Emily will be joining Messiah’s Department of Engineering in fall 2015 as assistant professor of biomedical engineering. They and their daughter Clara live in Upper Allen Township (Mechanicsburg).

Cynthia Lehman

Professor Cindy Lehman will also join the Department of Mathematics, Physics and Statistics in fall 2015 as lecturer of mathematics. Prior to this appointment, she was a mathematics and computer teacher at Harrisburg Christian School for six years and then an adjunct instructor for 11 years in computer and information science at Messiah College. Cindy is a mathematics-with-certification graduate of Messiah. She earned her M.A. in curriculum & instruction-educational technology at Loyola University Maryland. Her husband, Conrad, is a Messiah computer science alumnus and a lead software engineer at Highmark Blue Shield in Camp Hill. Cindy, Conrad, and their two children—Kyle (15) and Kara (13)—live in Hampden Township (Mechanicsburg).

Student News

Honors

Phoebe Chua ’16 (mathematics) was invited to present a poster at the Emory University – Laney Graduate School STEM Research and Career Symposium in Atlanta from March 25-27, 2015. However, because of insufficient funds, she was unable to accept this invitation.

Christa Cohen ’15 (physics-with-certification) was awarded a full Library Research Grant, in the amount of $750, to support her proposal “A Cumulative Design of Effective Science Curriculum Strategies and Resources for Students in Sofia, Bulgaria.” Christa traveled to Bulgaria over spring break 2015. Her library research surveyed the Petko Slaveikov Private Secondary School Library and the National Library of Bulgaria in Sofia to document the availability and accessibility of science materials at the secondary level. This project also led to her graduation with departmental honors in physics. Dr. Hare was her faculty reference.

Rebecca Ely ’16 (mathematics-with-certification) was selected as the MAC (Middle Atlantic Conference) Scholar-Athlete in Field Hockey. It was announced at the 14th Annual MAC Awards Luncheon held at Hood College in Frederick, Maryland on May 5, 2015. She also was named the Messiah College Female Senior Scholar-Athlete for 2014-2015. Becky finished her career with a 3.80 cumulative grade point average and was a two-time All-Region and three-time All-Commonwealth field hockey player. She also played lacrosse. In June 2015,

Becky was nominated for the 2015 NCAA Woman of the Year Award. The award, now in its 25th year, recognizes the female student-athlete who best excels holistically in these four areas: academics, athletics, service and leadership. The award will be announced at the NCAA ceremony in October 2015.

Tiffani Singley ’16 (computer and information science) was awarded the Crystal Meck Evans Scholarship for 2015-2016. This $1,100 award is given annually to a female student majoring in one of our CIS fields. Tiffani’s academic strength, service to the department and commitment to a career in computer science made her an outstanding candidate.

The Falcons I programming team—Nathan Chaney ’15 (computer and information science and engineering), Zachary Felix ’15 (mathematics) and Marcus Upton ’15 (engineering)—placed first in the Mid-Atlantic Region Programming Contest of the Association for Computing Machinery (ACM) held Nov. 1, 2014. The contest was five hours of intense programming in Java or C++ as the team attempted solving as many of the problem scenarios as possible. Falcons I solved more problems correctly than any of the more than 150 teams, including teams from University of Maryland, Virginia Tech, University of Virginia and University of North Carolina. As a result, this team was one of only 23 teams from the U.S. to go to the World Finals in Marrakesh, Morocco in May 2015. Other U.S. schools sending teams included Carnegie Mellon, Cornell, Georgia Tech, Harvard, MIT, Stanford, UC–Berkeley and UCLA. The team was coached by Dr. Scott Weaver and Jason Long (Computer Science ’03).
looking into optical sensors, as an alternative to an external machine, for use in finding blood oxygen levels from inside the patient.

Class of 2015: Employment and Education Placements (to date)

- **Keith Benning** (computer and information science—software development concentration): Lockheed Martin in Baltimore, Maryland—software developer
- **Andrew Budd** (computer and information science—software development concentration): vCalc in Frederick, Maryland—software engineer
- **Nathan Chaney** (computer and information science—computer science concentration, engineering—computer engineering concentration): IBM in Austin, Texas—software engineer
- **Christa Cohen** (physics—with-certification): Episcopal Service Corps in Harrisburg, Pennsylvania
- **James Crawley** (physics; computer science minor): Messiah College—laboratory assistant
- **Jeremy Diehl** (computer and information science—business information systems concentration): Office of Consumer Advocate for the Office of Attorney General—IT system administrator
- **Peter Jones** (computer and information science—software development concentration): Clark Associates in Lititz, Pennsylvania
- **Brandon Maze** (computer and information science—computer science concentration): Computer Aid, Inc. in Harrisburg, Pennsylvania—junior software developer
- **Travis Moyer** (mathematics-with-certification): Northern High School in Dillsburg, Pennsylvania—mathematics teacher
- **Stephen Nase** (computer and information science—business information systems concentration): Textron in Providence, Rhode Island
- **Connor Powell** (computer and information science—software development concentration, philosophy minor): ImageVision. Net in Mechanicsburg, Pennsylvania—software developer
- **Peter Shuck** (computer and information science—computer science concentration, mathematics; economics minor): Akumina Inc. in Nashua, New Hampshire—software engineer
- **Rebekah Smith** (computer and information science—computer science concentration): Cure International in Lemoyne, Pennsylvania—IT fellow
- **Celston Toote** (computer and information science—web management concentration): LifeWay Christian Resources in Nashville, Tennessee—junior UI/UX developer/designer
- **Sarah Van Ness** (mathematics, biology): Biostatistics (Ph.D.)—Boston University
With respect to financial support, some of you may wish to target donations to specific projects related to your 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 gift – check made payable to Messiah College – to Office of Development, One College Avenue, Suite 3013, Mechanicsburg, PA 17055-6807.

- To make a donation to the Department of Mathematics, Physics and Statistics, put MPS Dept. on the memo line of your check.
- To make a donation to the Department of Computer and Information Science, put CIS Dept. on the memo line of your check.
- To support Collaboratory Education Group projects, put Collab. Education Group – project name on the memo line of your check.
- Add YEP for the Yako Education Project.
- Add OBED for the Opportunities in Business and Educational Development Project.
- Add SCPH for the Harrisburg Science Camps Project.
- The SEH School has an enrichment fund that is used to fund student travel to out-of-state academic conferences to present their work. This fund rolls over year to year, so it is a great place for one-time gifts. Donors should specify SEH School – Enrichment Fund.
- If you are interested in contributing to a scholarship for students in the MPS or CIS Departments, 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 MPS or CIS Departments, contact the Office of Development. It takes $2 million to underwrite an endowed scholarship chair.

Department News

On July 1, 2015, the Department of Information and Mathematical Sciences was officially divided into two new departments: the Department of Computer and Information Science and the Department of Mathematics, Physics and Statistics. Functionally, the division occurred in January 2015, but for budgetary reasons, the division could not become official until the start of the new fiscal year. We are confident that this new structure will facilitate stronger programs and communication.

Computer and Information Science

The CIS Department houses two majors: computer and information science (four concentrations) and digital media (one concentration). It also houses two minors: business information systems and computer science. Full-time faculty members are Dr. Kilmer, Prof. Nejmeh, Dr. Owen, Dr. Rohrbaugh (chair) and Dr. Weaver.

The CIS Department hosted Coder Kids on campus on March 21, 2015. Coder Kids aims to “… encourage kids to develop their interests in all areas of STEM (Science, Technology, Engineering and Mathematics) through mentoring and hands-on learning with cool projects, interesting demos, and fascinating presentations by other kids and local professionals.” We had 74 guests in attendance (about 40 students) for a two-hour programming lesson.

The department revised both minors (business information systems and computer science) to update and strengthen them.

Fall 2015 enrollment projections for CIS are strong. As of March 30, CIS had the largest year-over-year increase in applications and acceptances of any department at Messiah with 68 applications (up from 34) and 53 acceptances (up from 25). Currently there are 29 CIS majors and 16 digital media majors enrolled in the fall 2015 sections of introduction to computer and information science.
Mathematics, Physics and Statistics
The MPS department houses five majors: mathematics, mathematics-with-certification, physics (B.A.), physics (B.S.), and physics-with-certification. It also houses three minors: mathematics, physics and statistics. Full-time faculty members are Dr. Eby, Dr. Farrar, Dr. Hare, Dr. Hellgren, Dr. Kryemadhi, Prof. Lehman, Dr. Phillippy, Dr. Robinson, Dr. Widmer and Dr. Wilcock (chair).

Program News
Physics
Christa Cohen graduated in May 2015 as Messiah’s first physics-with-certification major.

Drs. Hellgren and Kryemadhi and nine physics students attended the 1st Annual Meeting of the Mid-Atlantic Section of the American Physics Society (MAS-APS) at The Pennsylvania State University on Oct. 3-5, 2014.

Messiah College hosted the 63rd Annual Conference of the American Association of Physics Teachers – Central Pennsylvania Section (AAPT-CPS) on March 27-28, 2015. Approximately 50 high school teachers, college professors and students attended.

Collaboratory News
Faculty and students from both the CIS and MPS departments have been heavily involved in projects within the Collaboratory for Strategic Partnerships and Applied Research (messiah.edu/collaboratory/).

The Collaboratory Education Group has two current projects led by students from the MPS department. Rebekah Curtis (mathematics-with-certification ’16) leads the Yako Education Project working in partnership with Burkina Faso Outreach (www.bfoafrica.org). The project aims to produce mathematics materials that incorporate Bible stories with images and artwork done by the schoolchildren. Bekah was a Smith Scholar intern in 2014-2015. Working with Dr. Hare, she led a team of five students in the design and writing of a mathematics curriculum for children at the 4th grade level in Burkina Faso, West Africa. The lessons, in the French language, are culturally appropriate (written with a context familiar to the local community), satisfy the Burkinabé national educational standards, and include the integration of scripture.

Phoebe Chua ’16 (mathematics) leads the Opportunities in Business and Educational Development Project working in partnership with the Ruth Education Center in Malaysia. The goal of this project is to develop curriculum to improve the business acumen of
Myanmar refugees in Malaysia so that they can obtain legal employment.

Dr. Kryemadhi and Professor Ariela Vader advise the Collaboratory Education Group’s Harrisburg Science Camps Project. This project provides science enrichment for underserved students in the Harrisburg School District. Physics-with-certification and education majors delivered several science camps in Downey School and Camp Curtin Academy in Harrisburg. This project is funded by the Whitaker Fund for Math and Science Education.

Future Events

MPS department and CIS department Homecoming Receptions – Saturday, Oct. 17, 2015

Both the MPS department and CIS department will be hosting informal receptions for all respective department alumni at Homecoming 2015. Watch your mail/email for details.

Homecoming “+/- 3 Breakfast” – Saturday, Oct. 17, 2015

All 2013, 2014 and 2015 IMS (i.e., MPS and CIS) Department graduates are invited to brunch at Brothers Diner from 9-11 a.m. on Homecoming Saturday. Department students in their 2nd, 3rd and 4th years will also be invited. Email our administrative assistant, Jean McCauslin (JMccausl@messiah.edu) before Oct. 14 if you would like to attend.

Alumni Mathematics Teacher Dinner – Monday, Nov. 16, 2015

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 mathematics teacher and would like to reserve a place, please email Dr. Wilcock (swilcock@messiah.edu) by Nov. 9. 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 13th Annual Symposium – Friday, April 29, 2016

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 2016 (messiah.edu/SEH).

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 MPS 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.

New Address Reminder

Messiah College’s mail-receiving post office changed from Grantham to Mechanicsburg. As a result, the address for all Messiah faculty members is as follows:

Name of faculty member
One College Avenue, Suite #
Mechanicsburg, PA 17055-6807

• Suite # for MPS: 3041
• Suite # for CIS: 3046
**ANALYTIC THREADS**

*Analytic Threads* is the annual newsletter of the Department of Computer and Information Science (CIS) and the Department of Mathematics, Physics and Statistics (MPS) at Messiah College. It is sent annually to alumni and is also available electronically at the websites messiah.edu/CIS and messiah.edu/MPS.

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**Parting Thoughts**

We hope that all is well with 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 MPS and CIS Departments, 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 contact our administrative assistant, Jean McCauslin at jmccausl@messiah.edu.

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

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**Opportunities for 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 statement of interest to Dr. Wilcock (MPS) or Dr. Rohrbaugh (CIS) at One College Avenue, Suite (3041 for MPS or 3046 for CIS), Mechanicsburg, PA 17055-6807. The MPS and CIS departments often need part-time adjunct instructors to teach general education courses, and we welcome applications from alumni and their friends and family.