

The DEAN'S MESSAGE

Welcome to the December edition of our electronic newsletter. We hope this finds you and yours happy and healthy as we enter this wonderful holiday season. As alumni and friends of the college, we value your support and want to wish you a very merry Christmas.

During this special time of year, we have the opportunity to give – to our family, our friends, and to those less fortunate. Here at the college, we would like to commend and encourage this particular display of Christmas cheer. Though we should all strive to be charitable and generous throughout the year, the holiday season provides us with a unique opportunity to look outside ourselves and reach out to those around us.

In that spirit, we have been truly blessed to both give and receive this holiday season. As we endeavor to continue providing the best possible education and mentored research opportunities to our students, our College Volunteer Leadership Council (CVLC) has provided strong support to the college. At its last meeting, the CVLC established the goal for each CVLC member to donate \$1,500 to support an undergraduate student in mentored research for one semester. This thoughtful and generous gift will go a long way toward allowing us to give our students and faculty members all the resources necessary to build a better future through scientific and mathematical research.

Unfortunately, the college cannot sustain itself on the generosity of the CVLC alone. We must also rely on the charitable giving of other kind-hearted donors to fund our continued academic excellence. If you would like to help support the outstanding work being performed here at CPMS, please visit the Giving page on our Web site for more information. We greatly appreciate the help and support we continually receive from our friends and alumni.

Furthermore, we hope you enjoy the articles presented in this month's eNewsletter. Featuring the recent accomplishments and discoveries of our students and faculty, these stories offer a snapshot of the hard work of many dedicated individuals over the past year. As we move forward into a new decade, we hope to continue performing cutting-edge research and providing unparalleled educational experiences in our unique situation here at BYU.

As we continue in this endeavor, we will keep you apprised of our activities and progress. We thank you for being a part of our college family and for your continued support. We hope this newsletter finds you well, and that you and your family have a wonderful holiday season. Merry Christmas!

.....➔ **Scott Sommerfeldt, Dean**

DEPT. NEWS

CHEMISTRY AND BIOCHEMISTRY
Chemistry professor publishes G-protein study in prestigious national journal

COMPUTER SCIENCE
CS alumna receives tech industry award

PHYSICS AND ASTRONOMY
Students win top national awards for undergraduate research

STATISTICS
Stats professor's study of health care published in national journal

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MATH STUDENTS GET CRYPTIC

Jared Webb's assignment today: Decode pages of garbled numbers and letters to unravel a secret message hidden by 15 ciphers. With seven days to complete the task with the help of classmates, he's not too worried. The final exam, however, will give him only three hours to accomplish a similar feat working solo.

Welcome to BYU's first-ever cryptography course. Housed in the math department, one-third of the 29 students are not math majors. Half a dozen are prepping for careers in information security under the tutelage of mathematics professor Paul Jenkins.

"When people hear 'secret codes,'" says Jenkins, "a lot of people think of, say, the cryptograms in the newspaper. And we did that the first day and haven't looked back."

Webb and classmate Chris Guzman are aiming high. Both have applied for summer internships with the National Security Agency (NSA) and would be happy to land careers with this government agency that protects most of our nation's top-secret information. The NSA also helps secure many systems critical to keeping our way of life running smoothly: power plants, traffic grids and water lines to name a few.

These systems are protected by the types of codes that Webb, Guzman and their classmates learn about. Similar codes secure e-commerce transactions, digital health records and personal emails. Fortunately, the sophistication of modern cryptography is up to the task.

Where cryptograms and pre-1900 ciphers employed tricky puzzle mechanisms – all of which are weak in the eyes of a computer – most modern cryptography relies on fairly simple mathematics involving very big numbers. Security lies in the near impossibility of finding numbers that evenly divide into massive numbers.

"The best computers in the world can't do that very quickly," Webb said. "And it seems like we should be able to come up with a cool trick to do it, but no one has been able to do it in 30 years."

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