



California Mathematics Council Community Colleges

# CMC<sup>3</sup> NEWSLETTER

## President’s Message

*Mark Harbison, Sacramento City College*

Civil debate. It’s what separates man from ape. Well, that and opposable thumbs. And maybe fire. But one quality of a well-educated society is the ability to discuss things among people with different opinions than ours. It’s an opportunity to learn new things. It brings a sense of community when people can find common ground with each other, despite having different initial reactions to a certain situation. Note the ‘civil’ requirement here: personal attacks are not welcome.

This Newsletter includes some information about Statway. I expect that these articles will cause some debate. My opinion: I was surprised that the UC system decided that this counts as a Transfer-Level class, since it does not seem to me to be the same as the 3 years of high school math that is expected of incoming Freshmen. On the other hand, I have had occasional students in my classes that were bright enough to work in technical fields but who will never understand algebra enough to pass it – despite serious, sincere attempts.

I can honestly say that I can relate to both sides of the debate. Is this a blessing, since I can be happy either way? Or is it a curse that I can’t decide what one rule is best for all students?

## Table of Contents

President’s Message-----	front cover
The Nineteenth Annual Recreational Mathematics Conference at Lake Tahoe-----	3
2014 Monterey Conference Wrap Up and Look Ahead-----	4
CMC <sup>3</sup> History Quiz, Part 2-----	4
Statway Making Progress-----	5
Opposed to Statway-----	5
What’s Happening at Cuesta College-----	6
The Pleasures of Problems-----	7
Through the History Glass-----	8
The World of Work Will Require Post-Secondary Education: Creating Opportunity at Community Colleges-----	9
The Wright State Model: What is Engineering Doing and Does it work?-----	10
CMC <sup>3</sup> Foundation Report-----	11
In Memory of Raymond Wuco-----	13
Math Nerd Musings-----	13
Calendar-----	14

Debate is confusing sometimes. But the good news is that all opinions are welcome at CMC<sup>3</sup>. Please understand that CMC<sup>3</sup> as a group neither endorses nor condemns any particular program. We are here to provide a forum for conversation. Please consider writing a Letter to the Editor any time (contact information is on the bottom of the last page).

Also, be sure that your CMC<sup>3</sup> “campus rep” has polled the full-time faculty in your department recently on the position statement available at [www.amatyc.org/?page=PositionInterAlg](http://www.amatyc.org/?page=PositionInterAlg) . I have received responses from many but not all of the 57 colleges in the CMC<sup>3</sup> area. Many thanks to those of you who have already shared your opinions. Poll results will be published in the summer newsletter.

(see “President’s Message” on p. 2)

## Executive Board & Special Committees

President: Mark Harbison, Sacramento City College  
(916) 475-9461, [harbism@scc.losrios.edu](mailto:harbism@scc.losrios.edu)

(408) 374-0741, [wellis@ti.com](mailto:wellis@ti.com)

Past President: Susanna Gunther, Solano Community College, (707) 864-7000, ext. 4614,  
[SusannaElizabeth2020@gmail.com](mailto:SusannaElizabeth2020@gmail.com)

Membership Chair: Jenny Freidenreich, Diablo Valley College,  
(925) 969-2667, [Jfreidenreich@dvc.edu](mailto:Jfreidenreich@dvc.edu)

President-Elect: Joe Conrad, Solano Community College,  
(707) 864-7000 x 4372, [Joseph.Conrad@solano.edu](mailto:Joseph.Conrad@solano.edu)

Newsletter Editor: Jay Lehmann, College of San Mateo,  
(650) 863-5305, [MathNerdJay@aol.com](mailto:MathNerdJay@aol.com)

Secretary: Tracey Jackson, Santa Rosa Junior College,  
[tkk.jackson@yahoo.com](mailto:tkk.jackson@yahoo.com)

Spring Conference Chair: Mark Harbison, Sacramento City College  
(916) 475-9461, [harbism@scc.losrios.edu](mailto:harbism@scc.losrios.edu)

Treasurer: Rebecca Fouquette, De Anza College  
408-864-5522, [fouquetterebecca@fhda.edu](mailto:fouquetterebecca@fhda.edu)

Web Page Coordinator: Larry Green, Lake Tahoe Community College, (530) 541-4660 ext. 341, [drlarrygreen@gmail.com](mailto:drlarrygreen@gmail.com)

### Members-at-Large:

AMATYC Liaison: Mark Harbison, Sacramento City College (916) 475-9461, [harbism@scc.losrios.edu](mailto:harbism@scc.losrios.edu)

Articulation Breakfast: Steve Blasberg, West Valley College (408) 741-2564, [steve\\_blasberg@westvalley.edu](mailto:steve_blasberg@westvalley.edu)

Awards Coordinator: Katia Fuchs, City College of San Francisco, (510) 325-1616, [efuchs@ccsf.edu](mailto:efuchs@ccsf.edu)

Business Liaison: Dean Gooch, Santa Rosa Junior College,  
(707) 527-4704, [dgooch@santarosa.edu](mailto:dgooch@santarosa.edu)

Campus Reps Coordinator: Katia Fuchs, City College of San Francisco, (510) 325-1616, [efuchs@ccsf.edu](mailto:efuchs@ccsf.edu)

CMC Liaison: Jenny Freidenreich, Diablo Valley College,  
(925) 685-1230 x2302, [JTheSmith@comcast.net](mailto:JTheSmith@comcast.net)

Conference AV Specialist: Larry Green, Lake Tahoe Community College  
(530) 541-4660 ext. 341, [drlarrygreen@gmail.com](mailto:drlarrygreen@gmail.com)  
and Steve Blasberg, West Valley College  
(408) 741-2564, [steve\\_blasberg@westvalley.edu](mailto:steve_blasberg@westvalley.edu)

Fall Conference Chair: Joe Conrad, Solano Community College, (707) 864-7000 x 4372,  
[Joseph.Conrad@solano.edu](mailto:Joseph.Conrad@solano.edu)

Fall Conference Speaker Chair: Wade Ellis, West Valley College (retired), (408) 374-0741, [wellis@ti.com](mailto:wellis@ti.com)

Foundation President: Debra Van Sickle, Sacramento City College, (916) 558-2476 [vansicd@scc.losrios.edu](mailto:vansicd@scc.losrios.edu)

MAA Liaison: Wade Ellis, West Valley College (retired)

## Follow us on Facebook

### President's Message

(continued from front p. 1)

We are a volunteer-run organization of people *just like you* who enjoy meeting together on occasion to share ideas about improving student success in community college math and statistics courses. Please send nominations for candidates for this Fall's election to Susanna Gunther <[susannaelizabeth2020@gmail.com](mailto:susannaelizabeth2020@gmail.com)> .

I am grateful for these colleagues who spend a few Saturdays at our board meetings. (Note that everyone is welcome to attend our next meeting at the Montbleu Hotel, room #1707 in Stateline, NV on Apr. 19, 2015 at 9 am. We'll have free coffee, juice and morning snacks!). Thanks especially to Larry Green for local arrangements for the upcoming 19<sup>th</sup> annual Recreational Mathematics Conference on Apr. 17-18.

I am still collecting old CMC<sup>3</sup> documents. Thanks to Charles Barnett, Las Positas College, for sending a copy of the 2007 Monterey program! Now the only missing Monterey years are 1979, 1980, 1981 and 2001. I know that some great conferences did occur, but it would be even better to see some proof. Please contact me so that I can complete the collection of old newsletters and conferences (both Monterey and Tahoe)!

Volume 44, Number 1

Spring 2015

CMC<sup>3</sup> Newsletter is the official newsletter of the California Mathematics Council, Community Colleges, and is published three times a year--in the spring, summer, and fall.

Copyright© 2015 California Mathematics Council,

## The Nineteenth Annual Recreational Mathematics Conference at Lake Tahoe

*Larry Green, Lake Tahoe Community College*



CMC<sup>3</sup> will host the 19<sup>th</sup> annual Recreational Mathematics Conference on Friday and Saturday, April 17 and April 18 this year. The conference will be held in Lake Tahoe's MontBleu Resort Casino and Spa which is located near the lake and has all the

amenities including a salon and spa, arcade, shopping area, and, of course, plenty of table games and slots if you are feeling lucky. This conference is unique in that all of the talks are recreational in nature, focusing on applications and other mysteries of mathematics.

The conference begins at 7:30 PM on Friday, April 17<sup>th</sup> with an opening get-together. Then prepare to be perplexed as Michael McGinnis demonstrates his topological puzzle game "Perplexus" to warm us up to the weekend of mathematical games, art, and mysteries of our field.

On Saturday morning, the conference resumes with two sessions filled with more amazing uses, facts, and problems from mathematics. For example, most of us know that any function can be approximated by a series of sine waves; however we have not seen the way of using this idea to create beautiful art. On Saturday after lunch, Frank Farris will magically superimpose sine curves that spawn rosettes, friezes, and wallpaper patterns. Two more sessions on recreational mathematics will follow Farris' talk.

The grand finale of the conference will be this year's student keynote presenter. If you have a student who may be interested being this year's Tahoe Student Speaker, please encourage them to apply. The committee will be reviewing the applications on March 13. Students can apply online at [www.cmc3.org/conference/callForStudentProposal.html](http://www.cmc3.org/conference/callForStudentProposal.html).

Friday evening, the CMC<sup>3</sup> Foundation will be hosting its second annual conference gala, so be prepared for tasty morsels, amazing networking with other community college mathematics professors and a chance to help raise scholarship money for our students.

Conference registration is \$100 for members, \$60 for adjunct instructor members, and \$135 for non-members, (\$85 for adjunct non-members). Registration will include a meal voucher of \$15 toward any of the hotel's eating establishments. Full-time students may register for the nominal fee of \$5 which does not include the lunch voucher.

For more information, contact your CMC<sup>3</sup> campus representative or Larry Green, Tahoe Conference Program Chair, at [DrLarryGreen@gmail.com](mailto:DrLarryGreen@gmail.com). For the latest information and details about the conference and for the registration form please visit the CMC<sup>3</sup> website at [www.cmc3.org](http://www.cmc3.org). Please consider joining us at this one-of-a-kind conference that brings people back each year to enjoy the wonders of mathematics and the beauty of Lake Tahoe.

**Please consider putting one or two newsletters in the copy room or some such for other instructors to read.**

## 2014 Monterey Conference Wrap Up and Look Ahead

*Joe Conrad, President Elect/Conference Chair,  
Solano Community College*



The 42<sup>nd</sup> CMC<sup>3</sup> Fall Conference was held on Friday December 5 and Saturday December 6, 2014 at the Hyatt Regency Monterey Hotel and Spa. We had a

wonderful program that was enjoyed by nearly 270 attendees. Our Friday keynote, Alon Amit, talked about the poorly understood, but surprisingly useful notion of randomness. His talk was so well-received that he agreed to give an impromptu talk on Saturday afternoon. Our Saturday keynote, James Stigler, shared knowledge gained from years of research in mathematics education around the world. We also heard many comments about the high quality of the regular sessions and appreciate our many presenters and presiders.

We continued our transition to the Hyatt Regency by having all our sessions in the conference center. Having the ability to do this reduces the time we have to travel between sessions and increases the time we have to meet and greet one another. To help alleviate the concerns we heard last year about moving away from downtown, we arranged for a shuttle service after each day's sessions were completed. While there was not much demand on Friday night, there were 90 people who used it to travel downtown on Saturday. (My wife and I enjoyed our ride on the shuttle with others attending the conference, as well as the nice dinner we had on the wharf.)

We are already planning for next year's conference which will be held December 11 – 12, 2015. We will move upstairs at the Hyatt conference center which will allow larger session rooms and more exhibitors. The conference will

launch on Friday night with an Ignite session. Recall that these are five-minute talks that give people the opportunity to share something that they don't feel needs an hour with the excitement of automatically advancing PowerPoint slides. Please consider being one of our Igniters! (Contact me if you are interested.) We will have our usual slate of sessions, but hope to include a string of talks related to acceleration projects that presenters have experienced. If you have worked in this area and would like to share your findings with us, or if you have any talk you'd like to give, please fill out a speaker proposal which can be found at the website: [www.cmc3.org/conference/callForProposalsMonterey.html](http://www.cmc3.org/conference/callForProposalsMonterey.html).

We hope to see you there and at the Tahoe conference in April!

## CMC<sup>3</sup> History Quiz, Part 2

*Mark Harbison, Sacramento City College*

The following 5-question quiz is another tribute that I wrote to celebrate the history of CMC<sup>3</sup>. Good luck.

1. Rearrange the letters "tailor" to form the last name of the 1993 keynote speaker: Marty \_\_\_\_\_.
2. In what year did McGraw-Hill sponsor a "Math Trivia" session from 3:00 to 6:30 pm on a Friday?
3. When and why did the conference recently move to the Hyatt Regency Monterey?
4. Of the six talks that Don Albers, Menlo College, has given in Monterey, which was the only one titled "Mathematical People": '79, '81, '85, '86, '87, '96 ?
5. Earl Beard, the 1982 keynote (and '76 and '77 regular speaker) was from which university?  
a) U. Maine, b) U. Arizona, c) CSU Fullerton, d) San Jose State U., e) U. Chicago

**(see p. 7 for the answers)**

## STATWAY MAKING PROGRESS

*Ted Nirgiotis, Math faculty, Diablo Valley College*

As of January 16, 2015, the Statway programs at six California community colleges received a boost when the University of California Board of Admissions and Relations with Schools (BOARS) voted to approve Statway as UC transferable. The colleges are: Mt. San Antonio College, Foothill College, American River College, De Anza College, Diablo Valley College, and San Diego City College.

Statway is an alternative pathway through transfer level math requirements for non-STEM major students, and is currently articulated with CSU. The course curriculum covers the standard topics of an introductory elementary statistics course over two semesters, and with supplementary algebra, especially about modeling. What is different about Statway is the multi-pronged approach to tackling the barriers to success in math for basic skills community college students. The course has a strong emphasis on collaborative learning and on real world critical thinking, along with interventions to support student success. There is collaboration among faculty to continually improve course materials, experiment with innovations, and work with counselors and administrators as a team.

There is also collaboration on a state and national level, which is facilitated by the Carnegie Foundation for Teaching. Carnegie has provided critical inspiration, expertise and support to the development and implementation of Statway. They have been collecting data to document the success of this approach so far. Over the last three years, Statway has recorded a 50% success rate for students completing the full two-semester sequence, instead of the traditional three semester sequence of elementary algebra, intermediate algebra and then transfer level course, such as

statistics. The traditional sequence often has success rates as low as 15 % over the entire sequence, with roughly 50% attrition *at each level*.

At Diablo Valley College, we are into the second half of our second year, teaching three sections of Statway. Last year we had remarkable success with about 70% of students who began the program completing their math transfer requirement. The UC articulation decision bodes well for a scaling up of Statway in the not too distant future. If this sounds intriguing, check out [www.carnegiefoundation.org/in-action/pathways-improvement-communities/](http://www.carnegiefoundation.org/in-action/pathways-improvement-communities/), or talk to someone at a college currently teaching Statway. There is also a sister pathway, known as Quantway. Information can be found on the Carnegie Foundation website.



## Opposed to Statway

*Jim Johnson, Modesto Junior College*

I first learned of the Statway program a few years ago when I attended a session led by Roxy Peck and others at the AMATYC conference in Boston. At first glance, it seemed like an interesting idea and would serve some students very well. However, “after further review” as they say in the NFL, I have come to the point where I absolutely oppose this idea in general, for two main reasons.

First, it further waters down the meaning of a bachelor’s degree. Being a college graduate should mean being educated in a wide variety of subjects, not just those narrow disciplines in one’s major. Our college and most other community colleges, as well as the multitude of technological schools in California, have programs which train students for very specific careers. Every time my car won’t start, I am grateful for the mechanics who were trained here at Modesto Junior College and elsewhere and can diagnose the increasingly complex workings of my car.

However, a bachelor's degree means something different. It should imply that a person has studied a wide variety of subjects, not just the minimum required to get on to the next course. Some of us are fighting a losing battle with administrators here who are more interested in "getting students through" than educating them. I believe that anyone who cannot pass a fairly rigorous intermediate algebra course should not get a BA degree, pure and simple. Sounds harsh, but we already have too many educated fools in this world who know a lot about only one thing.

Secondly, I detest the concept of "pigeon holing" students. What if a student who completes Statway decides to change to a major that requires a full course in intermediate algebra? Statway has done that student a great disservice. Two of my own children made major changes in goals during and after college. My daughter, who began as a history major at UCSD and changed major to Environmental Chemistry, is now working (almost completed, we hope) on a Ph.D. in Environmental Engineering. Luckily no one put her in a Statway type course since she was "just" a history major.

Allowing students at age 18 to take a course that severely limits their future options is bad educational policy, and just flat wrong!

## Mark Your Calendar:

### 43rd Annual CMC<sup>3</sup> Conference

December 11 and 12, 2015

Hyatt Regency Monterey  
Hotel and Spa

## What's Happening at Cuesta College

*Marie Larsen*

The Cuesta College Mathematics Division consists of 18 full-time faculty and 25 adjunct faculty. We were fortunate to hire two new full-time faculty last year. The mathematics division is participating in the California Acceleration Project and has developed a one



semester, six unit course for non-stem majors that satisfies the AA/AS requirement and takes the place of our two semester, 5 unit, elementary and intermediate algebras. The preliminary results are promising and this class is helping students achieve their

transfer-level math courses such as Applied Statistics, College Algebra and Math for the Humanities at a quicker pace.

The College is in the process of hiring "Student Success Specialists" who will work with basic skills students in the areas of mathematics, English and ESL. We are looking forward to increasing student success in those courses. Also, a 275 million dollar bond was passed by the voters of San Luis Obispo County to support Cuesta College. We are looking forward to breaking ground on a new instructional building, which will be utilized by mathematics faculty and students.

## The Pleasures of Problems

Kevin Olwell, San Joaquin Delta Community College

Spring 2015 Problem: Square ABCD overlaps a circle of radius  $r$  in such a way that side AB is tangent to the circle with points C and D lying on the circle. How long is one side of this square?

Fall 2014 Problem: Find all real solutions to the equation

$$\sqrt{x+3-4\sqrt{x-1}} + \sqrt{x+8-6\sqrt{x-1}} = 1.$$

Solutions to the Fall 2014 Problem were submitted by Joe Conrad, Paul Cripe, Larry Green, Joel Siegel, Fred Teti, Carlos Valencia and Lakshmi Vanniasegaram.

Most solutions started with the substitution  $u = \sqrt{x-1}$ . After making this change of variable you find that the two square roots simplify:

$$\sqrt{x+3-4\sqrt{x-1}} = \sqrt{(u-2)^2},$$

$$\sqrt{x+8-6\sqrt{x-1}} = \sqrt{(u-3)^2}.$$

Recall that  $\sqrt{x^2} = |x|$ . In terms of  $u$ , the original equation becomes

$$|u-2| + |u-3| = 1.$$

If  $u > 3$ , then  $|u-2| > 1$ . Similarly if  $u < 2$  then  $|u-3| > 1$ . Thus there can only be solutions when  $2 \leq u \leq 3$ . In fact for every  $u$  in this range we do have a solution:

$$|u-2| + |u-3| = (u-2) + (3-u) = 1.$$

In terms of  $x$  the solutions are

$$2 \leq \sqrt{x-1} \leq 3 \rightarrow 5 \leq x \leq 10.$$

All are invited to submit a solution to the Spring 2015 problem either via email or US mail at the address below.

Kevin Olwell  
San Joaquin Delta Community College  
Agriculture, Science and Math Division  
5151 Pacific Avenue  
Stockton, CA 95207  
kolwell@deltacollege.edu



## Answers to the CMC<sup>3</sup> History Quiz, Part 2

(continued from front p. 4)

1. Marty Triola, Dutchess CC, has given 5 talks in Monterey (so far), between 1993 and 2008.
2. McGraw-Hill sponsored a "Math Trivia" event on Friday, Dec. 10, 2010 with food, beverages and prizes. CMC<sup>3</sup> appreciates all of our commercial sponsors, especially those who provide something special like this.
3. We recently moved to the Hyatt Regency Monterey for the Dec. 13-14, 2013 conference because the previous hotel gave away our ballroom to another group without first consulting us. Now we can enjoy free valet parking, free wi-fi, a free shuttle, two swimming pools, two whirlpools, great service, and all facilities together in one building.
4. Don Albers, Menlo College, famous for his *Mathematical People* biographies, used that title only once in 1985. In other years, the titles included *The NSF Calculus Initiative* and *Two-Year Colleges Under Siege*.
5. Earl Beard is retired now from the University of Maine. He was one of many speakers who has enjoyed visiting CMC<sup>3</sup> Monterey conferences so much that it was worth the 3000+ mile flight each way.

## Through the History Glass

J. B. Thoo, Yuba College, jthoo@yccd.edu



I just googled “history of mathematics”<sup>1</sup> and Google returned about 181,000,000 results in 0.24 seconds. So, there are clearly a lot of hits for history of mathematics on the World Wide Web. In this column, I am going to recommend a small handful.

The MacTutor History of Mathematics archive [4] is hosted by the School of Mathematics and Statistics, University of St Andrews, Scotland. It is a standard go-to Web site for history of mathematics. In the sidebar on the left-hand side you will see links to

Biographies Index  
 History Topics Index  
 Additional material index  
 Famous curves index  
 Mathematicians of the day  
 Search the archive  
 Help   FAQ   Contact us

In addition to researching a particular mathematician or a particular mathematical topic, it is fun to explore this Web site. The “Biographies Index,” for example, provides alphabetical and chronological indexes with links to information about the persons listed. Clicking on the “History Topics Index” brings up links to topics ranging from “Ancient Babylonian mathematics” to “Mathematics in Scotland” to an “Overview of the history of mathematics” to “Mathematical education.”

Another excellent Web site for history of mathematics is that of the Mathematical Association of America’s (MAA’s) online journal *Convergence* [1]. In addition to published articles, this Web site is a treasure trove for anyone who is interested in or

curious about the history of mathematics. *Convergence* bills itself as “[offering] a wealth of resources to help you teach mathematics using its history.” The Web site features

Mathematical Treasures  
 Featured Items  
 Convergence Calendar  
 On This Day  
 Today’s Quotation  
 MAA Reviews  
 Featured Classroom Capsules & Notes

“Mathematical Treasures,” for example, features images of original published works (such as “Peacock and snake problem from 1650 copy of the 12th century *Lilavati* of Bhaskara II”) and mathematical instruments (such as “German brass protractor with Baroque decoration from about 1700”). “Featured Items” are articles that can be brought directly into the classroom.

The Web site of the MAA’s History of Mathematics Special Interest Group (HOM SIGMAA) [2] is in a bit of a disarray currently, but it should be fabulous after a new Webmaster works on it. Nevertheless, the Web site is worth visiting now. Poke around it to see what information and resources are there.

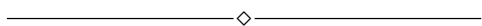
Another place into which to go adventuring is the National Curve Bank: A Math Archive [5]. I cannot describe it better than the Web site itself: “The National Curve Bank is a resource for students of mathematics. We strive to provide features - for example, animation and interaction - that a printed page cannot offer. We also include geometrical, algebraic, and historical aspects of curves, the kinds of attributes that make the mathematics special and enrich classroom learning.” There are many great deposits to check out. For instance, check out Deposit #103 “Cannonball Curves of Thomas Harriot: Projectile Motion circa 1600,” Deposit #64 “Vector Calculus Bridge Project: Vector Fields using JavaView,” or Deposit #80 “The Semicubical or Neile’s Parabola,” and many more.

<sup>1</sup>About 11:49 A.M. on January 31, 2015.



If you are interested in teaching topics in mathematics using original sources, I highly recommend the Web site “Teaching with Original Historical Sources in Mathematics” that belongs to Reinhard Laubenbacher, University of Connecticut Health Center, and David Pengelley, New Mexico State University [3]. There you will find a wealth of information on teaching using original sources (why and how), including course materials. One link on the Web site that you definitely should not miss is “Teaching Discrete Mathematics via Primary Historical Sources.” The projects presented include “Summation of Numerical Powers,” “Logic and Truth Tables,” “Euclid’s GCD Algorithm: Recursion vs. Iteration,” “Induction and Recursive Thought,” and “History of Coding and Huffman Codes” that can be used not only in a discrete mathematics course but also in a liberal arts mathematics course, for instance.

I hope that you find something useful at these Web sites. Please let me know of other good history of mathematics Web sites you come across.



Previous columns are on the Web at <http://ms.yccd.edu/history-glass.aspx>.

## References

- [1] *Convergence*,  
<<http://www.maa.org/publications/periodicals/convergence>>.
- [2] History of Mathematics Special Interest Group of the Mathematical Association of America,  
<<http://historyofmathematics.org>>.
- [3] Reinhard Laubenbacher and David Pengelley, “Teaching with Original Historical Sources in Mathematics” Web site, <<http://www.math.nmsu.edu/~history/>>.
- [4] The MacTutor History of Mathematics archive,  
<<http://www-history.mcs.st-and.ac.uk>>.
- [5] The National Curve Bank: A Math Archive,  
<<http://curvebank.calstatela.edu>>.

## The World of Work Will Require Post-Secondary Education: Creating Opportunity at Community Colleges

Wade Ellis, Jr.

*The vast majority of decent entry-level jobs in 2015 require a degree or certificate after high school, and, in fact, at least 66 percent of all jobs are predicted to have this requirement by 2020.*

-U-T San Diego: Ralf Swenson, Peter Ellsworth & Laura Kohn 6 p.m. Jan. 28, 2015

In May 2013, the National Center on Education and the Economy published a report entitled *What Does it Really Mean to be College and Work Ready?* This report looked at the actual preparation required for college or work based on the texts, assignments, and tests in introductory courses in eight of the most popular and diverse fields at randomly selected community colleges in seven states. These fields were: Accounting, Automotive Technology, Biotech/Electrical Technology, business, Criminal Justice, Early Childhood Education, and Information Technology/General Track. Although the requirements listed in these colleges’ catalogs usually included intermediate algebra (high school Algebra II) level mathematics preparation and strong reading and writing skills, the actual preparation required was far short of these listed requirements, except for the Information Technology introductory course. Should it be possible for students to learn the actual content and skills needed for success in for entry level jobs in these fields at community colleges? The topics and skills in mathematics are either not taught or taught poorly at community colleges while the English Composition writing assignments, though challenging, do not align well with the writing to be done in the named fields. In addition, the reading and writing required in the introductory

courses in these fields is at a modest level that would seem to be below what would be required in the workforce.

Thus, many students are denied opportunity to enter some fields that require certificates or degrees by this mismatch of listed and actual requirements as well as the mismatch of offered community college mathematics and English courses and needed topics and skills.

Should community college mathematics department reconsider their offerings and community college programs reconsider their requirements in light of these findings?

*What Does It Really Mean to Be College and Work Ready?: The Mathematics Literacy Required of First Year Community College Students*, (2013). Washington, D.C: National Center on Education and the Economy. Available for download at:



## The Wright State Model: What is Engineering Doing and Does It Work?

*Wade Ellis, Jr.*

The following quote is taken from the website <http://cecs.wright.edu/community/engmath>. The Wright State model is being implemented with the help of an NSF dissemination grant at 15 colleges throughout the nation including CSU Long Beach. The course, EGR 1010, has caused significant increases in retention and degree completion in the engineering program at Wright State University in Dayton, Ohio. Does such a course have implications for engineering transfer programs at our community colleges?

The traditional approach to engineering mathematics education begins with one year of freshman calculus as a prerequisite to subsequent core engineering courses. However, the inability of

incoming students to successfully advance through the traditional freshman calculus sequence is a primary cause of attrition in engineering programs across the country. As a result, the Wright State model seeks to redefine the way in which engineering mathematics is taught, with the goal of increasing student retention, motivation and success in engineering.

The Wright State approach begins with the development of a novel freshman-level engineering mathematics course, EGR 1010: "Introductory Mathematics for Engineering Applications." Taught by engineering faculty, the course includes lecture, laboratory and recitation components. Using an application-oriented, hands-on approach, the course addresses only the salient math topics actually used in core engineering courses. These include the traditional physics, engineering mechanics, electric circuits and computer programming sequences. The EGR 1010 course replaces traditional math prerequisite requirements for the above core courses, so that students can advance in the engineering curriculum without having completed a traditional freshman calculus sequence. This has enabled a significant restructuring of the engineering curriculum, including the placement of formerly sophomore-level engineering courses within the freshman year. The Wright State model concludes with the development of a revised engineering math sequence [Calculus I,II,II], taught by the math department later in the curriculum, in concert with College and ABET requirements. The result has shifted the traditional emphasis on math prerequisite requirements to an emphasis on engineering motivation for math, with a "just-in-time" structuring of the new math sequence.

Additional information and data can be found at:

<https://sciencemath.wright.edu/sites/default/files/page/attachments/Klingbeil%20and%20Bourne,%202013.pdf>

## CMC<sup>3</sup> Foundation Report

*Debbie Van Sickle, Foundation President,  
Sacramento City College*



### Scholarships and Competitions

Last spring the CMC<sup>3</sup> Foundation awarded a total of \$6,000 in scholarships to students attending four of our member colleges. Last year's

winner can be seen in the summer edition of the CMC<sup>3</sup> newsletter at <http://www.cmc3.org/Newsletters/CMC3Summer13Newsletter.pdf> or on the Foundation Web page at <http://www.cmc3.org/foundation.html#scholarships>.

We are now beginning our 2015 scholarship competition. In May we will be awarding one \$3000 first place, one \$2000 second place, and one \$1000 third place scholarship to highly qualified community college students. Our winners will be students who have successfully completed a minimum 30 college units, including at least 8 units at CMC<sup>3</sup> colleges, are currently enrolled in a minimum of 6 units at a CMC<sup>3</sup> college, and who have completed at least one mathematics course at the level of second semester engineering calculus or higher. Application packets will be due in March. For instructions and application materials go to <http://www.cmc3.org/foundation.htm>

During the Monterey conference the Foundation sponsored a student poster contest that included a \$100 cash prize. The first place winner was Nadya DeBeers with her poster titled "Where Do I Begin" about finding the prime factorizations of very large numbers. Nadya and her advisor Dean Gooch are from Santa Rosa Junior College. Nadia plans to major in mathematics with the



intention of becoming a teacher. She is the Treasurer of the SRJC Math Club.

The Spring Conference at Lake Tahoe will feature a talk given by the winner of the Foundation's annual Student Speaker Competition. Thanks to the generous sponsorship of Debra Landre, a former CMC<sup>3</sup> President, the winner of this competition will be given a \$500 scholarship.

Applications for both competitions are open to any currently enrolled community college student in our region. More information about these competitions will be available on our website at <http://www.cmc3.org/foundation.html>.

### Fundraising

CMC<sup>3</sup> Foundation scholarships are only made possible because of the generosity of our members, our vendors and other contributors. At the Monterey conference this year we raised almost \$1,800 in a combination cash donations, and the sale of raffle tickets and merchandise.

At the spring conference in Lake Tahoe we will be having our second annual Gala fundraiser on Friday, April 17 at 9:00 p.m. after the keynote speaker. Tickets for a suggested

donation of \$20 will be available at the registration table and at the door. We will serve alcoholic and non-alcoholic beverages, and a variety of hearty Hors d'oeuvres and deserts. Your ticket will also be put in a drawing at the end of the conference for prizes including free registration to next year's conference in Monterey and a free stay at the MontBleu Hotel.

Everyone who is a member of CMC<sup>3</sup> is also a member of the Foundation. Our members and other supporters can help us continue or scholarship programs by supporting us in the following ways.

- Make a tax-deductible cash contribution\*.
- Donate prizes for our raffle. The value of these items is also tax-deductible\*.

Donations can include (but are not limited to):

Wine, beer, and other libations

Candy, cookies and other non-perishable food items

Gift cards for stores, restaurants, or services

New items you received as a gift and can "re-gift" to us (stationary, books, t-shirts, electronics etc.)

New gift baskets (store bought or homemade)

New items we can add to other gift baskets

Baskets (need not be new) we can use to make gift baskets

- Help us get cash or raffle prize donations from businesses or individuals. I especially would like help reaching out to publishers and other vendors that you may have an especially good relationship with.

- Purchase lots of tickets for our raffle and encourage your friends to do so as well.
- Purchase our t-shirts and other items for sale at our table during the conferences.
- Attend our Gala fundraiser on Friday night of the Tahoe conference.
- Volunteer to help us with any of our fundraising efforts (sell raffle tickets or gala tickets, help with event set up or clean up, put prize baskets together, etc.)
- Suggest new fundraising ideas to any member of our board.

I would like to thank everyone who made generous donations of money and prizes over the last year. Without your support none of our work would have been possible.

\*CMC<sup>3</sup> Foundation is a nonprofit charitable organization under section 501(c)3 of the Internal Revenue Code. Contributions are tax deductible to the extent allowable under federal law (as long as no goods or services are provided in exchange for the donation). Our Tax Identification Number is 94-3227552. Cash donations can be made in three ways:

- At the time you register for either conference (There is a box to check on the registration form. Please use a separate check, but mail it in the same envelope as your registration form.)
- In person at one of our conferences, either by check, cash, or credit card.
- By mailing a check to our treasurer Rebecca Fouquette, 595 Gettysburg Drive, San Jose CA, 95123

## In Memory of Raymond Wuco

Barbara Illowsky

I am very sad to write that Raymond Wuco passed away on December 30, 2014. He was 86 years old. Ray was co-founder of our organization, CMC<sup>3</sup>, in the early 1970s. His involvement really started before there was “CMC<sup>3</sup>” when he and Jim Curl first started planning for a northern



California mathematics organization for community college faculty. Ray was our second president, serving in that position from 1974 – 1977. He continued to stay involved with CMC<sup>3</sup> for approximately 40 years. Many of you may have met Ray sitting at the CMC<sup>3</sup> Foundation table in Monterey. In 1992, Ray received our very

first Distinguished Service Award in 1992.

Ray’s mathematics teaching career spanned almost 50 years, the last 20 or so at San Joaquin Delta College. He retired in 1996 and moved to Carmel by the Sea. He continued to attend our annual conferences. Ray was also involved in many Carmel organizations during his retirement. CMC<sup>3</sup> produced a video in 2010 of the organization’s history. You may watch that video with Ray’s interview at: <http://cmc3.org/resource.html>

We, individually as faculty, and collectively as an organization, are indebted to Ray for his foresight and leadership of the California Mathematics Council, Community Colleges.

## Math Nerd Musings

Jay Lehmann, College of San Mateo



If you’ve taught first-semester calculus as much as I have, then you know only too well that challenging topics include related rates and optimization problems. One component that these two topics share is modeling. Many students are terrible at it. How often have we heard them lament, “If only

I could just find the function, then I could do the calculus.”

This semester I decided to take the bull by the horns. During the first week of classes, I always review precalculus, and I did the same this semester. And as always, I spent one day having students work collaboratively on modeling. The new ingredient is that for every quiz and test, I have set aside real estate for one modeling problem. That means students will have to preform modeling on six quizzes and two tests before we reach related rates.

I’m quick to agree that I’ve given up some prime real estate. There’s more than enough calculus problems I want to squeeze into my quizzes and tests. But if students devote some serious study time toward modeling for the first 8 weeks, I hope to see a good return on my investment come related rates. And if all goes according to plan, there will be no need to put modeling problems on quizzes and tests after that, except within the scope of optimization problems, which students will tackle in week 12. Fingers crossed.

In the summer issue of the newsletter, I’ll let you know how it all works out.

## Calendar

March 6, 2015: **AlaMATYC 2015 Annual Conference - "Mathematics: Learning to Infinity"**, Faulkner State Community College, Fairhope, AL. Contact: [Michael Green](#). Website: <http://alamatyc.wix.com/alamatyc>

March 14, 2015: **CMC<sup>3</sup>-South "Super Pi Day" Conference**, Anaheim, CA. Contact: [Art Nitta](#) and [Maribel Lopez](#). Website: [www.cmc3s.org](http://www.cmc3s.org)

April 9-11, 2015: **40th Annual IMACC Conference**, Allerton Park, Monticello, IL. Contact: [Connie McLean](#). Website: [www.imacc.org](http://www.imacc.org)

April 10, 2015: **NEBMATYC 2015**, Metro Community College, Omaha, NE. Contact: [Steven Reller](#). Website: [www.northeast.edu/Organizations/NEBMATYC](http://www.northeast.edu/Organizations/NEBMATYC)

April 17-18, 2015 **Annual CMC<sup>3</sup> Recreational Mathematics Conference**, MontBleu Hotel, S. Lake Tahoe, Contact: Mark Harbinson [harbism@scc.losrios.edu](mailto:harbism@scc.losrios.edu), [www.cmc3.org](http://www.cmc3.org).

April 17-19, 2015: **48th NYSMATYC Annual Conference**, Rochester, NY. Contact: [Larry Danforth](#). Website: [www.nysmatyc.org](http://www.nysmatyc.org)

December 11-12, 2015: **43rd Annual CMC<sup>3</sup> Fall Conference**, Hyatt Regency Monterey Hotel and Spa, Monterey, CA . Contact: Joe Conrad (707) 864-7000 x4372, [JosephConrad@solano.edu](mailto:JosephConrad@solano.edu)

---

Jay Lehmann  
Editor  
CMC<sup>3</sup> Newsletter  
[MathNerdJay@aol.com](mailto:MathNerdJay@aol.com)