Welcome to the very first newsletter of the Department of Mathematics at Phoenix College!

This is a project that has been long in the making, since it was first announced, but now it is finally here. The purpose of this newsletter is to bring us closer together as a department, by sharing a little of ourselves and our experiences, and keeping us informed of what is happening in our world of mathematics and mathematics education.

We will not duplicate articles found in other publications but we will give you a sampling of the information that is “out there” and point you in the direction of the sources.

Since this is the first time I have been an editor of anything, I hope that I can count on you for feedback, suggestions, and ideas on how to improve this publication. This newsletter is for you, the faculty of the math department—residential and adjunct—so I encourage you to submit articles that you would like to share.

The newsletter will be published once a semester, and each publication will feature a residential faculty, an adjunct faculty, and—whenever the case may be—a newly-hired faculty member. We will also have as permanent sections, the topics of developmental math education, math history, and a fun problem to tickle our brain.

Welcome from the editor

Do You Know What It Means to be a Learning-Centered College?

According to Dr. Terry O'Banion, known as the father of the concept, the Learning College is "an institution designed to help students make passionate connections to learning."

Four key learning principles drive this goal:

- Evaluation
- Communication
- Collaboration
- Responsibility

For detailed information of what it means to Phoenix College to be a learning-centered college, please visit the web site:  
http://www.phoenixcollege.edu/about/learning-college.

You will see a wealth of information there; especially the links to the Learning Principles and Learning Assessment.
Welcome to New Faculty—Frank Marfai

Frank Marfai joined the ranks of full-time faculty at Phoenix College in the fall of 2013. After pressing him for his biography, we found out that Frank graduated from Glendale Community College in Glendale, California with an Associates of Arts degree in both Mathematics and the Physical Sciences. After encouragement by his Physics teacher, he transferred to Occidental College in Los Angeles and graduated with a Bachelor’s of Arts degree in Mathematics and minored in Physics, with an emphasis in Computer Science. During his senior year at Occidental College, he worked as an intern at NASA’s Jet Propulsion Laboratory working with team members who developed the software to download, translate, and catalog images that came from spacecraft mapping the Earth.

After graduation, Frank was hired full-time as a software engineer in the application development and technology group of the Advanced Missions Operations Division. He developed and maintained software applications that supported various missions at JPL, including Cassini, Galileo, SeaWinds/QuickScat, and Deep Space 1. A couple years later, he began a career in teaching. He went back to college and graduated from Cal State San Bernardino with a Master’s of Arts degree in Mathematics. He taught at the high school level and at various community colleges in Southern California prior to coming to Arizona. The last two colleges where he held full time positions were at Riverside Community College (in Riverside, California) and College of the Desert (in Palm Desert, California). In all, Frank had taught for about 10 years prior to coming to Phoenix College.

“Frank developed and maintained software applications that supported various missions at JPL, including Cassini, Galileo, SeaWinds/QuickScat, and Deep Space 1.”

Deep Space 1— Thermal Vac Test (spacecraft in back).
Featured Faculty

Editor’s note: Paul Fedock had a One-Year-Only appointment as full-time faculty at the Department of Mathematics at Phoenix College for the academic year 2013-2014. This article was scheduled to be run at that time.

Paul Fedock is currently a One-Year-Only mathematics instructor at Phoenix College (PC) – he began at PC in the fall of 1999 as an adjunct faculty member teaching mostly during the evening. Paul has also taught math part-time in the MCCCD since 1978 at Glendale CC and Paradise Valley CC. He has also taught various math courses at ASU Main and West campuses.

Paul is a Phoenix native and decided he wanted to be a math teacher after having an inspiring instructor at Saint Mary’s HS. Being very active in sports during high school he was offered a “full-ride” scholarship to play football at PC under legendary coach Shanty Hogan. Paul laughs about the “full-ride” designation since at that time in the mid-60’s tuition for a full-time student (12 – 18 credit hours) was less than $50. During his two years at PC he met his future bride and they have just recently celebrated their 43rd wedding anniversary. He has two daughters – Rachel and Annie (both out of the house thankfully says Paul) and one grandchild.

Paul received his Bachelor’s degree from the University of Arizona with a double major in mathematics and physical education. One year later he attained his Master’s degree in Math Education from ASU and began his teaching career at Apollo High School in Glendale while also coaching the boys’ varsity tennis team. While at Apollo and as math department chair Paul was instrumental in attaining approval and implementing the calculus curriculum into the Glendale Union High School District schools.

After nine successful years at Apollo Paul’s wife Patricia became pregnant and informed him he “…needed to get a REAL job and make some ‘decent’ money…” Paul then began his information technology (IT) career as a COBOL programmer supporting manufacturing systems in Tempe. Although he gave up his daytime, high school-level math teaching career for his (better paying) IT job he continued his math instruction during the evenings at the community college level – he has 36 years of MCCCD math teaching experience. Paul completed 30 years of full-time IT experiences and retired from Salt River Project as a Project Manager in 2009.

Paul states that it is pure joy for him to be on the PC campus – so many good memories. He now teaches in some of the classrooms in which he once took math courses at PC. For fun he loves playing tennis (he lettered at PC also) and golf. He is “world-renowned” for his extravagant Christmas light displays (20k+ lights) and his students cherish his thought provoking Bonus questions on exams (ex. What color is a ripe orange?).

Without question Paul truly loves his PC experience as an instructor and his interaction with his students. He welcomes you to stop by and say hi – you will have some fun.
Featured Adjunct Faculty

My name is David Jordan Calderon and I have been with Phoenix College since Fall 2010 and have enjoyed every semester since joining the team. I have taught MAT142, MAT121, MAT122, and MAT151.

I have experience teaching Math at the high school and college level. I enjoy working in both domains because it gives me an opportunity to better prepare high school students for the college mathematics they will have to take. I love teaching at the college level because the students are studying different programs, and I like getting them to think of how they will use Math in their career.

My experience teaching college is not very extensive, but I hope it continues to grow. I started teaching face to face courses directly after a full day of working at Metro Tech High School, just a mile from Phoenix College. It was a really rewarding experience to teach former high school students, and hear them say how their classes in high school prepared them for college level math. We all know that is not always the case, so it made me proud.

While I taught face to face, my main goal was to make the math relevant to their program or to the real world as much as possible. Early advice and guidance from Joe Sueyoshi, Tim Bryan, and Maribeth Marquard (Paradise Valley Community College) helped me to achieve great success as a young, Math instructor. As a high school teacher, I was used to working in Professional Learning Communities where teachers collaborated often and shared things with each other. The culture as an adjunct instructor was somewhat of a juxtaposition for me. I was happy to be in an environment where I was trusted as a professional to deliver quality instruction, but was also nervous about making mistakes. These three individuals were there for me whenever I needed direction, had questions, or when they wanted to offer constructive counsel.

Now that I am teaching online, my concentration is to be accessible to students at all times. Taking online courses can be very difficult for students, especially Math courses. It is important for me to check in with my students at least twice per week about their progress. I also provide students with email replies within 24 hours, online tutoring through email or skype, phone tutoring, and face to face tutoring by appointment. Joe Sueyoshi, Kelly Loucks, James Sousa, Victor Cornell, and Kory Ambrosich have all been instrumental in my transition from face to face courses to online. James Sousa has exposed me to Open Educational Resources (OERs), a resource that I immediately grew to love. I think it works so well because of the videos he has created. It is something I have also been able to share with my high school students.

As I move forward with PC, I hope to continue to grow as an instructor. My goal in the next 3 years is to teach 3 courses I have not taught yet. I am also interested in teaching face to face courses again at some point. Lastly, I want to see Math students have a greater appreciation and understanding for the beautiful language we teach them.
Developmental Mathematics

It seems that Developmental Education is a hot topic and in the news continuously in higher education, particularly in Community College news. The big topics we hear repeatedly include the high numbers of students needing remediation as they enter post secondary schooling, the low completion rates among this population coupled with the increasing expectation and demand for a better skilled and competitive workforce.

How do we address all these issues? Re-teaching students how to do the steps when teaching a math concept does not seem to be increasing the completion rates or better preparing them for subsequent academic coursework or the work force. There are three topics that strike me as key components in addressing some of the issues mentioned above: 1) rigor and high expectations, 2) knowledge construction when teaching and learning math concepts and 3) student persistence.

Holding students accountable for demonstrating true understanding of what they are learning will prepare them for the college level work that follows their developmental coursework. If we do not prepare them for the coursework that follows—then, of course they will have difficulty in completing the requirements necessary for a degree or program. With high expectations from the start, students will be aware that consistent and sustained effort is required to meet the demands of a course.

Numerous articles have recently referred to the necessity of providing activities that engage students in their own knowledge construction; this is of particular importance to the developmental education student. Knowledge construction requires students to actively build conceptual connections and use prior knowledge to understand concepts. This may sound familiar to those who attended the series of developmental math workshops that Debbie Ermoian presented this past semester. Each of the workshops could stand by itself as a valuable learning experience, but when all five workshops were attended, it was evident that knowledge construction was etched into the flow of topics. We struggle with the issue of having enough time for students to engage in activities—in order to truly develop conceptual understandings. It is hard to break from our habits and what we are used to—but, I think that we should give up covering some topics in exchange for students to more deeply understand those fewer well developed concepts.

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Many students, based upon their prior math academic experiences, interpret their struggles as a sign of weakness, instead of a result of their behaviors—especially a lack of perseverance. So how do we support and encourage students to persist? That is the million dollar question. Perhaps this is an area that we need to pursue in targetting meaningful faculty development to help us support our students and teach them the
Mathematics History: Robert J. Hannelly

"The potato famine chased my grandfather, Michael Hannelly, out of Ireland when he was about 35 years of age. He settled on a farm near Diagonal, Iowa."

Robert Jeffrey Hannelly was born in Creston, Iowa, April 30, 1901, the son of Robert Hannelly and Rachel Jeffrey, and died in Phoenix, Arizona on April 7, 1988. He began his college career with an A.B. degree from Grinnell College, in Iowa; and continued, to earn an M.S. degree from State University of Iowa and a Ph.D. from the University of Colorado. Dr. Hannelly spent his life in the field of education, first as a mathematics teacher, and later as a community college administrator. He was an executive dean of Phoenix College for eighteen years, and president of the Maricopa County Community College District for four years. As Dr. Hannelly tells us in his own words: "I served as president of the Arizona Education Association, the Don's Club, and the Phoenix Kiwanis Club. I was elected to Phi Beta Kappa in college. To sum up: my life can be described by family, Iowa, railroading, education, Arizona, teaching, and college administration".

Dr. Hannelly was hired by Phoenix College as a mathematics instructor in 1927 and some years later, he became Dean of Phoenix College – the college did not have presidents then. In 1962, he became the founding president of the Maricopa County Community College District – the position of chancellor did not exist at that time. Dr. William E. Berry, president of Phoenix College in 1988, and a former student of Dr. Hannelly, tells us about former teacher: "To many of us who worked with him, Dr. Hannelly was always simply THE DEAN, and so he remains Dean Hannelly of Phoenix College. As I have occasion to attend social or ceremonial gatherings in this community, and my association with Phoenix College is identified, I am often told of events and incidents concerning the life and work of Dr. Hannelly. He was universally liked and respected". Dr. Berry planned to dedicate the 1988 commencement ceremonies to Dr. Hannelly, but sadly, he passed away by May. Instead, Dr. John S. Goff, from the Social Science Department, spoke in his place. Dr. Goff gave tribute to his good friend by saying:

"If the fates had permitted, Dr. Hannelly would have been with us to participate in what would have marked sixty years since he attended his first Phoenix College commencement in 1928. He had planned to address the convocation and with typical thoroughness and detail was at work on the talk he planned. Instead I have the honor to mention some of the matters which he might have discussed, but will also take the liberty to say about him things which modesty would never have allowed him to say about himself.

Oftentimes a person who has herself or himself made significant contributions to our world will remark, "Phoenix College gave me my chance," or "I could not have done what I have without the aid of Phoenix College." Two governors of Arizona, a substantial number of lawyers and judges, physicians and nurses, as well as people in business, fall into a group which either began its higher education at Phoenix Junior College or received all of it here. It must be remembered that there was a time when our sister institution across the valley in Tempe was a small non-accredited teacher training institution. The old pattern was for a poor but promising student to spend two years in the junior college and then go on to the university in Tucson or out of state. Dr. Hannelly was proud of those who on this campus learned the application of Mr. Justice Holmes' remark that a human mind stretched to a new idea never returned to its original dimensions. The Dean believed firmly in the equality of opportunity for all to receive an education. He devoted his life to that principle.

As conditions changed he saw expanded roles for the community college. One group of students who were the especial favorites of Dr. Hannelly were the adult students. A believer that education was a life-long process, and the fact that in his eighty-seventh year he was enrolled in a creative writing class, demonstrates his commitment to that, he saw to it that his institution provided a second or third chance to those who either wanted to come back or had to because of changing employment patterns. My first meeting with the Dean came in the spring of 1960 when I was about to join the Phoenix College faculty. His first advice to me was that in Phoenix during the summertime only fools and tourists wear coats. That information was easy to apply. His second advice was not so simple but vastly more important. It would always be my duty, said Dr. Hannelly, as a member of the
Robert J. Hannelly

A few weeks ago when many tributes were being paid to the memory of Dr. Robert Hannelly, a statement sometimes heard was that he was a gentleman of the “old school.” For a moment analyze the principles and qualities which marked him. He was mannerly, polite and courteous to all. He was intelligent, able and hard working in his office. He had integrity, honor, a sense of duty and a compassion for other human beings. He had curiosity, a desire to learn and to achieve wisdom. To say that these traits identify one as being of the “old school” leaves one to ponder what may be the attributes of succeeding generations. Rather there is a universality about his principles and we may all strive to emulate them. The extent to which we fail follow that which made Dr. Hannelly a gentleman of the old school is a measure of our failures as human beings.

In Yeomen of the Guard, W.S. Gilbert poses: “Is life a boon? – if so it must befall that death when ‘ere he calls, he must come too soon.” We answer in the affirmative and so it was in the case of our friend whom we honor tonight. But those of us who had the privilege of associating with him will ever remember him; and even those who do not know his name but who are the better for the work which he did, have cause to be grateful to him. And when as will happen in the future, Arizona becomes older and more settled, when future generalizations have cause to examine the roots of their institutions, they too will remember that the “Father of Community College Education in Arizona” was Robert J. Hannelly and honor his life and career, as we do tonight.”
Fun Math Question in this Issue

While doing an activity with the chain rule with your students in a first semester calculus class, you pose the following question.

Given \( f(x) = 49\sqrt{(x^2 + 1)^{39}} \), find \( f'(x) \).

Some students in your class decide to rewrite \( f(x) \) using fractional exponents as follows.

\[
f(x) = (x^2 + 1)^{39/49}
\]

Then they find the derivative from this expression to be \( f'(x) = \frac{29}{49} (x^2 + 1)^{-10} (2x) \)

However, one student rewrites \( f(x) \) in the following manner:

\[
f(x) = [(x^2 + 1)^{39}]^{1/49}
\]

Then the student finds the derivative to be

\[
f'(x) = \frac{1}{49} [(x^2 + 1)^{39}]^{-40/49} [39(x^2 + 1)^{38}](2x)
\]

Is this student’s response correct? How do you know? If not, where did the process break down?