

NCMATYC NEWS

Winter 2003

STUDENT MATH LEAGUE NEWS

As this issue of the NCMATYC News goes to print, results from the Fall 2003 Student Math League tests were not available. There are a couple of news nuggets to keep you satiated until those numbers are compiled.

First off, this year, twelve North Carolina schools are competing, the most ever. Joining the ranks this year are Asheville-Buncombe CC, Nash CC, and Pitt CC. Thanks to their moderators for getting the ball rolling at their schools.

Secondly, if your school wants a taste of Student Math League competition this spring, you can get it for free! Just e-mail me at wessellc@durhamtech.edu and I'll send you a copy of the test just like any other moderator. You can give the test at your school during the spring testing window (late February through mid March) and I'll send you the key. Your results won't be tabulated with all the paying customers, but if you'd like, I'll send you the official results and you can see how your students would have done. If you do this, it will be an excellent dry run for 2004-05 participation!

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NCMATYC ELECTION



Ballots for the election of NCMATYC officers for the 2004 - 2006 Executive Board will be mailed to members by the end of January. Completed ballots must be returned by February 20. The results of the election will be announced at the conference in Spruce Pine.

Be sure to Vote for your upcoming leadership!

The NCMATYC NEWS is an official publication of the North Carolina Mathematical Association of Two-Year Colleges and is published by Wake Technical Community College's Mathematics and Physics Department. Questions and comments should be directed to Rob Kimball, Editor, Wake Tech Comm College, 9101 Fayetteville Road, Raleigh, NC 27603-5696. Articles for publication are welcomed and should be submitted electronically to the editor in either Word or WordPerfect format: rkimball@waketech.edu. The deadline for the Spring issue is March 29, 2004.



ARTICLES FROM THE 29TH ANNUAL AMATYC CONFERENCE, SALT LAKE CITY, UTAH

by Lee Ann Spahr, Durham Tech CC

The 29th Annual AMATYC Conference in Salt Lake City was excellent. The setting was absolutely beautiful – a lovely city surrounded by breathtaking snow-covered mountains. The conference hotel, The Grand America, was one of the most majestic hotels I have ever visited.

I attended several excellent workshops and sessions, the best of which was a two-hour workshop conducted by none other than Mr. Statistics himself, Marty Triola. The workshop was terrific, and Marty gave some very good ideas for incorporating projects into statistics classes. Marty Triola is undoubtedly the master of statistics projects, as he spends enormous amounts of time compiling real-world data for the projects.

I was also very excited to attend three sessions devoted to my area of interest, “Mathematics and Music.” The presenters gave interesting aspects of the relationships between these two disciplines. (However, a certain presenter from Durham Tech also has a fabulous “Mathematics and Music” presentation that she has done at both NCMATYC and AMATYC!)

Another session I attended was devoted to math anxiety, an area in which I also have tremendous interest. The presenter was superb, and I enjoyed her session immensely.

The highlight of the conference for me was networking with colleagues, authors and publishers. I really enjoyed having detailed conversations with the authors and publishers of our textbooks, and of course having dinner with John Hornsby was just totally delightful.

We did take a little time to sample some local flavor, as we visited Park City and Deer Valley, the site of the 2002 Winter Olympics. We also visited the Great Salt Lake, the University of Utah, and Temple Square. On Thursday evening we were allowed to visit an open rehearsal of the Mormon Tabernacle Choir, so in usual fashion, Mitzi and I made our way to the front seat of the Tabernacle in order to get the closest possible look. The choir, the acoustics, and the organ were just phenomenal. As a church organist, I am so happy that I had the opportunity to experience the Mormon Tabernacle Choir!!

So, all in all, Salt Lake City was great and well worth the time and effort. Let’s hope we can have a huge representation from NC next year in Orlando!

by Chuck Wessell, Durham Tech CC

My first lesson learned at the Salt Lake City conference is that the money I saved by staying at another hotel downtown seemed inconsequential as I walked four blocks in a cold, steady rain.

After arriving in the capital of the Beehive State late Wednesday night, I made my way to the Grand America Hotel, falling in love on the way with the crossing signs at each intersection that not only tell you when to walk and when to stay, but also count down how many seconds you have left to clear the intersection.

Check-in went smoothly, and in my new semi-celebrity status as Student Math League Chair, I was introduced to everyone from the Memphis office and got to put faces with the names behind so many e-mails.

With my name badge now proudly draped around my neck, it was off to *Stimulating Critical Thinking in Calculus* presented by Mark D. Turner of Cuesta College. Get your students thinking about the meaning of limit, continuity, and differentiation with some great worksheets available at <http://academic.cuesta.edu/mturner/speak.htm>. I highly recommend them.

After a quick snack, I went to a session for first-time AMATYC conference attendees. I met some nice folks from all around the country and then headed for the keynote speech by Eric Jolly and the grand opening of the exhibits, which was pretty light on free food, but I did get to meet celebrated textbook authors Marty Triola, John Hornsby, and Gary Rockswold. I will not go into the details of that night’s dinner since if you were in the Salt Lake City greater metropolitan area you probably heard our table.

I was up early enough on Friday to make it to the 11:00 session *Nonlinear Data Sets and Functions for Intermediate and College Algebra* by Laurie Boswell and Joanne S. Lockwood of Plymouth State

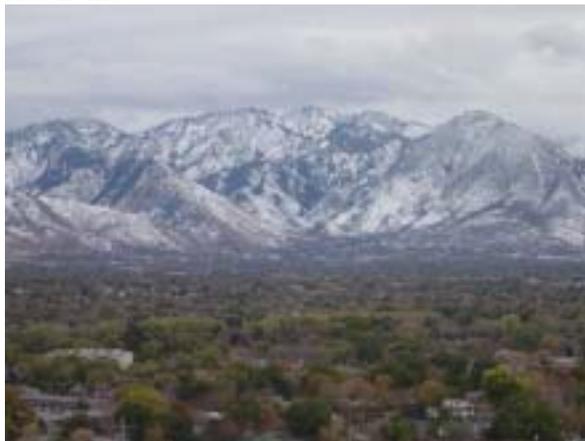
College. The presentation was very entertaining and was filled with a bunch of examples you could plug right into your boring lectures to bring a class to life. I've been back a week and have already used one in class. You can e-mail Laurie at lboswell@together.net to get a copy of their examples and some worksheets.

Since my mother always told me to remain silent if I had nothing good to say, I will skip commenting on a couple of sessions I attended on Friday. I got to catch up with some friends at the Southeast Regional Meeting and would like to thank Rob Kimball for not throwing me out for sitting in the back row and talking. I then had a meeting with my Math League predecessor Susan McLoughlin where she told me about all the parts of the job they don't tell you about in the job posting. I won a wonderful photograph of Delicate Arch at the Friday Night Event where the desserts were wonderful and the band...well I'm not going to use the word "wonderful" for a third time in this sentence.

Saturday was filled with a Student Math League session and the Student Math League committee meeting. I then presided over the session *Individualized Worksheets and Exams Using Microsoft Word and Excel* by James L. Lapp. I loved the idea of being able to make a bunch of different worksheets and exams using a random number generator and mail-merge functions, but now that I've seen it in action I'm not sure it's worth the effort. Still, if you're interested in learning more I can get you some materials if you e-mail me at wessellc@durhamtech.edu.

Finally, Sunday morning rolled along and I went to see Judy Ackerman in her last few hours as president-elect present the *AMATYC Leadership Session: I Want to Get Involved!* We talked about the structure of AMATYC and what made a good leader and I got to say goodbye to some people I met in Salt Lake City before running off to the airport and the long ride home.

In closing, let me urge everyone reading this to attend the NCMATYC conference in March. Let k be the proportionality factor that relates the cost of the AMATYC conference compared to the cost of the NCMATYC conference. I can assure you that the AMATYC conference is not k times better than the NCMATYC conference. In your quest to become a better math teacher, the NCMATYC conference is a great deal. Don't miss it.



Picture (right) taken from Phil Mahler's room in the Grand America, Salt Lake City – looking southwest.

by Cyrus McCarter, Wake Tech CC

During several sessions and discussions at the AMATYC 2003 conference, the topic of online courses came up. A non-scientific summary of the discussions I heard and participated in is:

- 1) Statistics and terminal Liberal Arts Mathematics courses worked best online.
- 2) Many schools require students to come in for proctored tests.
- 3) It is extremely important to screen students before allowing them into the course. Some instructors require students to respond to an email and attach a Word file (or similar). Most require some form of interaction via the web to make sure the students will have the hardware, internet connection, and technological know-how to do the course. A lot of schools require going to a councilor and/or orientation before the class.
- 4) Nobody is doing hands-on activities via the internet. as far as the particular session and discussion participants I heard are concerned. They assign projects, which works especially well for statistics since lots of data is available on the internet, but there is no data taking, measurement, etc. There is group interaction via email, etc., for the projects.
- 5) Levels of success vary depending on how well the students have been screened for the course, as much as anything else.
- 6) For some students, especially in the Liberal Arts courses, there seems to be good, even better than in-class, interaction with the instructor.

Internet courses seem to be a mixed bag. Good students with good time-management skills and decent internet skills can do quite well. The opposite type of students appear to do even worse than usual. Finally, whether these internet courses align with the standards is debatable. Whether they will be taught online anyway is not.



ARTICLES FROM THE 29TH ANNUAL AMATYC CONFERENCE, SALT LAKE CITY, UTAH

by Deborah Benton, Wake Tech CC

In a session on reform courses below calculus, the speaker discussed how a traditional pre-calculus class was compared to a reformed pre-calculus class. One test question was the same on both exams. The question asked students to explain the meaning of the slope in the context of the problem. Many of the traditional students left the question blank. Others responded the slope was the change of y over the change of x . One even said the slope was the change of x over the change of y . Students in traditional classes had trouble identifying the meaning of slope beyond the definition they memorized.

Traditional courses are not preparing students for the real world if students can't associate mathematical concepts to their applications. We need students to be able to read, analyze, and draw a conclusions. They also need to be able to write their answers in complete sentences using the context of the problem. Therefore, our courses should better prepare students by including realistic and meaningful applications. The tests must also include problems that require the student to use the solution in a meaningful way or to explain the solution using the context of the problem.

Change is always difficult and takes time, but if two or more people from a department are willing to try new ideas, they should be able to find the resources and the encouragement from other instructors. Sometimes the resources are found in a new book and sometimes the encouragement comes from department heads.

Change is good. The positive change in our students is even better.

by Cathy Johnson, Alamance CC

One interesting workshop at the AMATYC conference was "Teaching Statistics" presented by Marty Triola. He listed three aspects of statistics classes that he felt were most important: critical thinking which emphasizes the interpretation of statistics, the use of technology, either computer programs or calculators such as the TI-83+®, and collaboration among students on projects. Formulas, he stated, are important but should not be the focus of an introductory course in statistics. Instructors should encourage students to use technology to do their calculations and then step beyond the formulas to focus on the meaning and value of statistics.

Triola emphasized the importance of using real-life data in order to make a statistics course relevant and interesting to students. He distributed a copy of a survey that he gives his students on the first day of each semester. He uses the data collected from these surveys throughout the course as new topics are presented. For example, he asks students to indicate their heights on the survey. Later, he has students measure their heights and compare the numbers to see if it is true that people generally exaggerate their heights. Examples of other real-life data sets included real data about speeding tickets issued in front of the college, measured body temperatures vs. 98.6° standard, readability measures of books such as Harry Potter vs books by Tolstoy, and Benford's Law.

A topic of interest to the group was his advocacy of using t-tests for all samples where sigma is unknown regardless of sample size. The $n > 30$ rule is really not used, according to Triola, by practicing statisticians so he feels that textbooks should follow their lead, presenting material and procedures as they occur in day-to-day research.

by Jesse Williford, Wake Tech CC

A lot is happening in Distance Learning in mathematics at the community college level. At the 2003 AMATYC Conference in Salt Lake City I attended six sessions that focused on Distance Learning. They all agreed that math courses can be taught successfully online. Some of the key factors are:

1. **Setup advising guidelines for the counselors.** Online classes will take more of the student's time than a traditional class. Students have to have the motivation and skills to take an online class. Some community colleges require an A or B in the prerequisite class.
2. **Course setup should include a detailed syllabus.** It should include all scheduled activities and the required dates. It should include the policies on grading, attendance and makeup work. Students should be given a clear understanding of the course workload. A website with working links to all resources is required. Blackboard is the second-best Learning Management System. WebCT seems to be the favorite. A major problem with Blackboard is that it is painfully slow in setting up a test. A lot of online interaction is required for each test item and the system is slow. Several people recommended a program, Respondus, that is standalone and costs about \$80. You can create a test on it and then upload it to Blackboard. After a test, update the student on the status of their grade. Create a list of FAQ.
3. **The instructional phase.** Explain the assignment or material and why the topic is important. Clarify the mathematical concepts. Demonstrate the concepts with some examples. Have the students work some examples. Create a community of learners so that the students will share and learn from each other. Give the students some homework so that they can demonstrate the new concepts.
4. **Course Management.** Keep in contact with the students through email or the online forum. The online forum is better in that others can read the questions and answers without having to repeat the answers. Respond to email in a timely manner, no longer than 24 hours. Check for email and forum requests, morning, afternoon and at night. Also, check a couple of times on the weekend. Give assignments online and accept their work online. Online instructors get to know their students better than in the traditional classes.
5. **Assessment.** Use the same tests as the traditional classes. Most classes require the students take these tests onsite with a photo id. Some instructors allow the tests to be taken online. The exam has to be taken onsite and the student must pass the onsite exam to pass the course. There should be an evaluation form for the online student once the class is completed.
6. **Peer Teaching Support.** It was pointed out that it works much better to have more than one online math instructor. Peer support and sharing can help in the setup, management and assessment of online classes.

If students are advised properly, reasonable motivated, encouraged with emails and timely responses to questions and submitted assignments, they can succeed in an online math class.

by Jan Mays, Elon University

In addition to being a great venue for sharing ideas with colleagues, I was inspired by sessions I attended at this year's AMATYC conference. On Friday, I attended a session by featured speaker, Dr. Thomas Angelo on the scholarship of teaching. Effective teaching communicates our passion for the subject, engages students, and encourages students to learn from one another. He encouraged us to be systematic about testing the effectiveness of our methods in the classroom and then share our results with others. Angelo offered several guidelines for developing the scholarship of teaching.

- Build shared trust by lowering personal and interpersonal barriers to change.
- Build shared motivation with peers to determine the goals we want to achieve in our teaching.
- Design backward from the shared vision and goals to develop strategies.
- Make connections to the larger community and be aware of what is being done elsewhere.
- Take a scholarly approach by building on what has already been learned and enhance it.
- Use assessment to focus on what matters most - the shared goal.

He pointed out that grant money is frequently available for research at CC's because we are more focused on teaching than the universities. I hope many of you will share what you are doing in the classroom with others in the state at the spring NCMATYC conference.



ARTICLES FROM THE 29TH ANNUAL AMATYC CONFERENCE, SALT LAKE CITY, UTAH

by Jo-Ann Williams, Wake Tech CC

According to Tom Bassarear of Keene State and Charles Dietz of College of Southern Maryland, math teachers need to build confidence through success on **hard problems**, provide extensive experience with **real problems**, develop effective cognitive strategies, develop communications skills, allow time to solve problems (days versus minutes) and eliminate hints or short cuts. We do this by using worthwhile mathematical tasks that are rich mathematically, pedagogically and student-wise.

Mathematically rich suggests that the doing of the task develops student's mathematical understandings and skills as they connect to one or more of the big ideas in mathematics. They put one or more of the process standards in the foreground – problem solving, reasoning, communication, connections, or representation.

Pedagogically rich indicates that the tasks are genuine problems as opposed to recitation of procedure. There is not just one answer, nor just one way to do it. The task involves discovery and creation. Students have some responsibility for checking their answer vs. the teacher telling them if they are right. They allow further challenges and/or are extendible.

Student-wise rich implies that the tasks are interesting and "worthwhile" to the student. These tasks honor different learning styles. Even though everyone can begin to work on these, they are challenging for students at different levels.

An example of a mathematically worthwhile mathematical challenge is **The Monkey and the Mangoes**: Three men who had a monkey bought a pile of mangoes. At night one of the men came to the pile of mangoes while the other slept. Finding that there was just one more mango than could be divided exactly by three, he tossed the extra mango to the monkey and took away one third of the remainder. Then he went back to sleep. Presently another of the men awoke and went to the pile of mangoes. He also found just one too many to be divided evenly by three, so he tossed the extra one to the monkey, took one third of the remainder, and returned to sleep. After a while the third rose also, and he too gave one to the monkey and took away the number of whole mangoes which represented precisely one third of the rest. The next morning the men got up and went to the pile. Again they found just one too many, so they gave one to the monkey and divided the rest evenly. What is the least number of mangoes with which this can be done? How many mangoes did each man get?

The problem solving report must contain the following information in separate, titled sections: description of problem in student's words, short statement of solution, very specific strategies used to find the solution (including those that did not lead to a solution), interesting or useful extensions or modification of the problem, specifically three cognitive functions used in the problem and how you used them during the problem solving process plus other insights and observations.

by Lisa Hodge, Wake Tech CC

While attending the AMATYC 2003 conference in Salt Lake City, I was glad to see that there were several sessions and workshops dealing with the need to reform College Algebra and Intermediate Algebra. At Wake Tech Community College, we teach a reformed College Algebra with a modeling approach. One of the hardest things about teaching the course is finding data and data collection activities. Therefore, I am always interested in sessions and workshops that will provide me with new data sets or places to find them, and new data collection ideas.

A session titled, "Math Made Alive: Connecting Math in the Real World," gave participants a wealth of information on where to find data. The session was presented by Frank Wilson from Green River Community College. In his presentation he stated that "data must be interesting, relative to the students, and better understood using math." He gave out several website addresses that can provide instructors with needed data and participants were also given handouts with data sets and ideas for activities.

Another good session on College Algebra reform was a workshop titled, “Mathematical Modeling: What could students learn?” presented by Scott Adamson from Chandler-Gilbert Community College. He suggested to always start with a realistic problem situation. He creates videos to present the problem to his students, using a take off from “Tool Time” called “Rule Time.” He also uses the show Fear Factor as a basis for many of his problem solving situations.

One of the best sessions that I attended on College Algebra reform was a session presented by Laurie Boswell and Joanne Lockwood from Plymouth State College. Their session was titled, “Non-linear Data Sets and Functions for Intermediate and College Algebra.” They provided participants with a great number of data collection and modeling activities that could easily be used in any College Algebra classroom.

It feels good to come home from a conference with new ideas to use in the classroom and with the feeling that reforming College Algebra is the way to go. Taking a different approach to College Algebra takes a lot of time and effort. It definitely needs to be tackled by a department and not an individual. Seeing the light turn on for a student that has never “gotten math,” is well worth it.

by Helen Kolman, Central Piedmont CC

As a “first time” attendee, I found the AMATYC Conference in Salt Lake City a great national conference experience. Information garnered from the formal sessions as well as friendly conversations over dinner was revitalizing. Discussions on winning strategies for student math league competitions, wild web innovations, and new twists on solving old student problems sparked interest in a few new or improved pathways for all of us from CPCC.

The AMATYC members were outgoing and innovative - maybe that's what it takes to be a community college instructor. The NCMATYC contingent was a significant conference presence. Overall, the event was A+.

In addition, the Mormon Tabernacle Choir is really awesome - even in rehearsal.

SUBSCRIBE TO THE NCMATYC LISTSERVE!

This email forum allows community college mathematics instructors throughout the state to instantaneously discuss issues of concern and to share ideas. To join, send an email message to majordomo@ncccs.cc.nc.us from your email account. Don't include any subject line and include only “subscribe NCMATYC” in the body of your message. You will automatically receive a response with a welcome message containing instructions for posting to the list.

Picture (right) from Phil Mahler's room looking northeast.



TENTH INTERNATIONAL CONGRESS ON MATHEMATICS EDUCATION ICME—10



Are you interested in attending the 10th International Congress on Mathematics Education to be held July 4th –11th, 2004, in Copenhagen, Denmark? (Gosh, that sounds really wonderful.) I have information about the conference in the form of three copies of booklets describing the program, the planning committees and the goals of the Congress. Also included are applications to present as well as to attend. If you are seriously considering going and would like a copy of the booklet, email me at cupittmm@durhamtech.edu. I will send the booklets to the first three people from whom I hear. Sounds like a wonderful opportunity.

A VISION FROM THE MOUNTAINTOP by **Chuckie Hairston, Wake Tech CC**

Plans are underway for our annual spring conference in Spruce Pine on March 11-12. Pat McKeague of San Luis Obispo, CA, is scheduled to be our keynote speaker. Those of you who have heard Pat speak for us or at AMATYC know that he will have something interesting to share with us.

This year's program will include some sessions from speakers outside the mathematics community. Billie Ruth Sudduth, a professional basketmaker, will present a session on how she uses mathematics, particularly the Fibonacci sequence, in basket weaving. In addition, Dr. Deborah Harmon, Director of Counseling, and Deborah Lonon, Director of the Readers' Theater, at A-B Tech will be doing a presentation on aspects of math anxiety.

For the first time, there will be a President's Forum where you can meet the new NCMATYC Board, find out the responsibilities of each of the officers, and have an opportunity to talk with Board

members about the direction in which the organization is headed.

A Presenter's Form is included with this newsletter and is also available at the NCMATYC website. Consider sharing classroom activities, projects, and other information with your colleagues. As you can see on the form, presentations of varying length are possible. If you are interested in doing a 15-minute presentation, contact one of the following people:

MAT 140 & 115 Phyllis Patterson
MAT 161, 171-172 Jan Mays
MAT 263, 271-273 Tim Beaver
Developmental Mary Marsha Cupitt

For presentations of other length, simply complete the Presenter's Form online or mail a completed hard copy to me.

Other conference information will be posted on the NCMATYC website as it becomes available. Check periodically for updates. I look forward to seeing you at the exciting spring conference in March.



CALL FOR MEMBERSHIP/RENEWAL

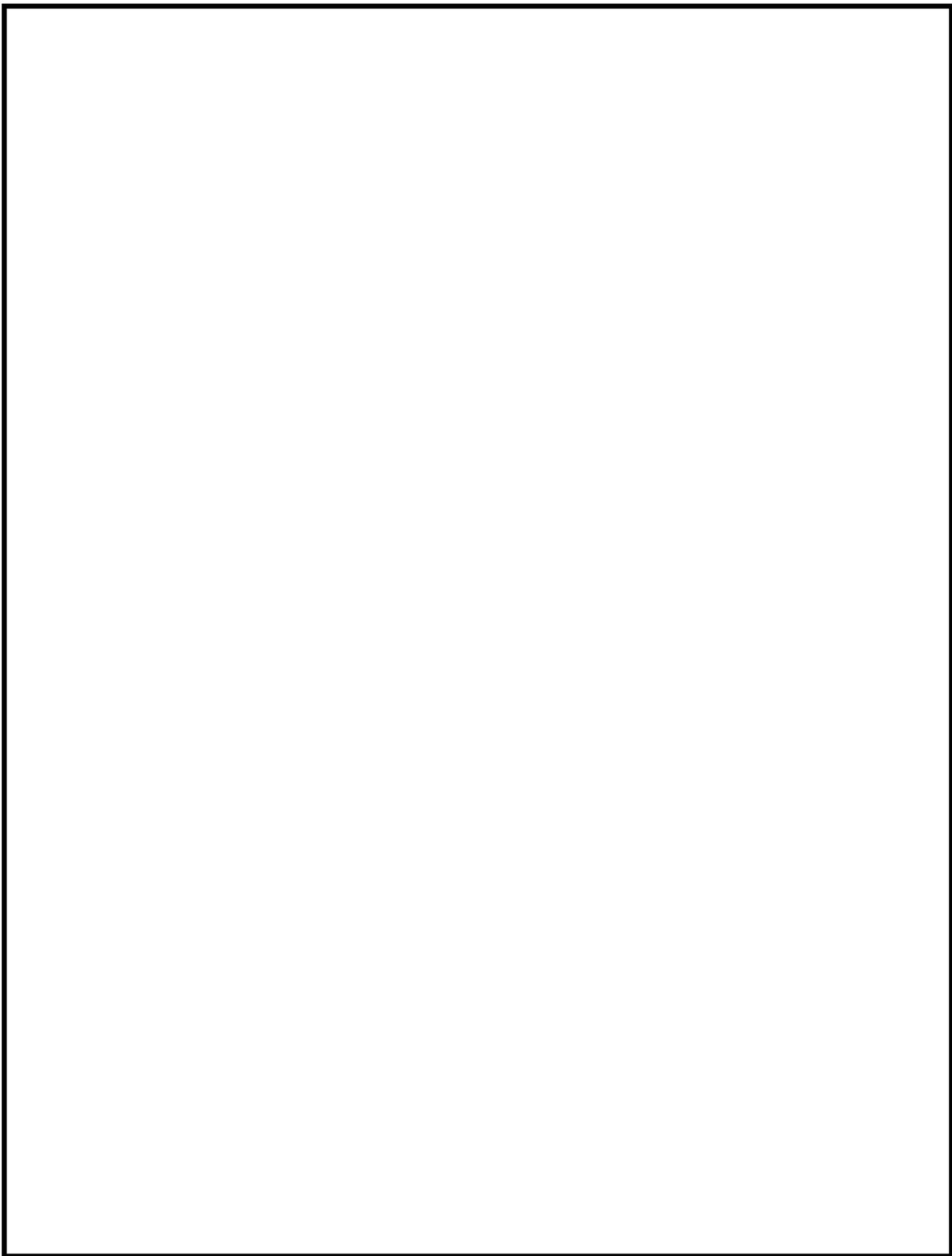
by **Mitzi Logan, Pitt CC**

I would like to take a moment of your time to encourage each of you to find members of your department who are NOT members of NCMATYC and encourage them to join. Hopefully, there is no such person at your school. However, if there is, please encourage them to join as one of their faculty development goals. Once they join, encourage them to become active members by attending our conference in the spring, attending the AMATYC conference, reading and submitting items for the newsletter, and/or participating in the Student Math League contest.

At the moment we have 295 members, which includes more than 40 members with expired memberships. Please check your mailing label on the newsletter for your expiration date. Furthermore, we have no members from Bladen, Johnston, Martin, and Roanoke-Chowan CC. If you know anyone from these campuses, please encourage them to join and participate. There are over 20 members from schools, colleges, and universities; several active members who are retired; and a member from South Carolina and one from California. Yet we have four community colleges in NC with no members.

Please encourage your colleagues to join and become active NCMATYC members. Also, please let me know if your address changes so that I can contact you when your renewal date arrives and send you the newsletter.

Thanks for your help and your continued support of our wonderful organization.



Durham Tech

We at Durham Tech are happy to report that we are experiencing another mathematically challenging and exciting year!

We are once again very active participants in the Student Math League Mathematics Contest both statewide and nationally. Last year Durham Tech had the highest level of participation in the Southeast Region, and we are off to another good start this year as we had 49 students take the Fall semester test on October 31.

Last spring, **Chuck Wessell** was named National Testing Coordinator for the AMATYC Student Math League, and he assumed this position at the recent AMATYC Conference in Salt Lake City. Due to Chuck's new position, **Sam Cheung** will now serve as our local test administrator. **Chris Mansfield** has been selected to serve on the Student Math League Review Committee for editing and reviewing potential test questions.

Sam Cheung has been chosen by the Virtual Learning Community to serve as an editor for the MAT 161 Internet course.

We are busy preparing to offer MAT 140 and MAT 161 on-line next year. **Sam Cheung** will be teaching MAT 161 on-line in Fall 04, and **Chris Mansfield** will be teaching MAT 140 on-line in Spring 05.

In an effort to contribute to the total education of our students, we have successfully incorporated writing assignments in all of our classes. Our statistics instructors have worked especially hard on this task, as they have integrated some rather complex

projects into their classes. **Marsha Cupitt** requires students to design an experiment, incorporating into the experiment the comparison of two groups. The report that students write constitutes their final exam grade. The instructor is finding that students are enjoying the project and are more actively involved in the course than students not involved in a project.

Over the past two years we have increased and expanded our use of technology in all mathematics courses. We are now utilizing Smartboard technology in our classes, and all full-time instructors have placed courses on Blackboard.com. Additionally, we have implemented Maple Software extensively throughout our mathematics curriculum. **Dotte Williams** has been the pioneer in introducing Maple in MAT 172. We now begin teaching Maple in MAT 172 and continue utilizing it throughout the Calculus sequence.

Terry Philipp has been very successful in introducing MAT 090 into our curriculum. We have been offering the course for two years now, and we are most pleased with our results. Due to an intense screening process, we have had an enrollment of 7 or 8 students each semester, and **Terry** has really enjoyed helping her students progress through both MAT 070 and MAT 080 during the course of one semester.

We are looking forward to seeing all of you at the NCMATYC Conference in March!

Alamance CC

Alamance Community College welcomes two new faculty members this fall, **Jeff Townsend** and **Sarah Bergmann**. **Sarah's** family heritage includes several educators and she joins our faculty after working at Nortel including several years in their European offices. **Jeff** has taught at several community colleges including Vance-Granville, and comes to us after a year in Graduate School at UNC studying computer science. Because of our increased enrollment, we have 7 full-time faculty members and 19 part-time instructors working this fall.

In the area of curriculum improvement, we have added MAT 140A and MAT 161A to our course offerings. Students are required to take these labs and feedback from instructors and students has been encouraging. During the spring semester, we will be offering a new course, MAT 165 - Finite Math. The inclusion of this course will offer our students an additional math option as they complete their AS degrees. **Ray Harclerode** is developing the syllabus and will be teaching this course.

NCTM REGIONAL - CHARLESTON, SC

by Rob Kimball, Wake Tech CC

Ron Larson, a noted author, made a presentation entitled, “The Three Most Important Things in Teaching Algebra.” The three things were
Students cannot use algebra to solve problems if

1. they cannot read and write (understand what they’ve read and make sense out of it),
2. they are not familiar with the basic mathematical models and their rules, and
3. cannot do unit analysis.

In addition to making these points, he stressed the fact that being a math teacher is normally not a job where we get to be nice to students – to be their “buddies”. He said that when he first started teaching, that was important (being their buddy); but not so now. He said that students have dozens of chances to meet new buddies, but he is the only chance to be their math teacher that term. Since math demands rigor and strict adherence to rules and guidelines, we are normally forced to be the bad guy and make the student *redo* their work. Being “slack and sloppy” is not ok in math. “Why is it so hard to line up equal signs?”, he asked. I’d like to share something that Ron got from the NCTM Standards.

Consider the problem. (right)

Many students don’t know where to start. They read the problem and sit with their “pencil five inches above the paper” doing nothing.

If the teacher does what is shown here (right), only the people who could do the problem to start with will understand it.

Students need to have something that they can depend on to get them started. Have the student identify the nouns in the problem.

Construct pieces of card stock with these nouns written on them and put them with cards that contain the operations.

Have the student arrange the cards to solve the problem. (They know this arrangement is correct because “per” means division.)

Another way to use this idea, is to start with a set of cards and have the student arrange them to produce an equation and then write a story problem based on your equation. There are usually a great many different arrangements for the cards. The problem they construct should mention the items in the *same order* as they appear in the arrangement of cards.

You work for 2 ½ hours babysitting and get paid \$12. What is your hourly rate?

$$\frac{12}{2\frac{1}{2}} = \frac{12}{\frac{5}{2}} = 12 \times \frac{2}{5} = \$4.80$$

You work for 2 ½ hours babysitting and get paid \$12. What is your hourly rate?

2 ½ hrs	12 \$	x \$ per hour
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+	-	×	÷	=
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x \$ per hour	=	12 \$	÷	2 ½ hrs
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Cost of Meal \$	Tip \$	Total Cost of Meal \$
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+	-	×	÷	=
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Cost of a tank of gas \$	Price per Gallon \$ per gallon	# of gallons of gas
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Don Slater gave a presentation entitled "Physics in My Mathematics Classes." Don showed a collection of activities with the CBL and CBR that he uses to motivate mathematics. He used the TI-83+ Silver Edition. One activity was the ball bounce. He used **Select** to graph one bounce and model that bounce using a quadratic. He also used a voltage probe on the CBR to measure the rate at which a 220 μ F capacitor loses its charge as it is released from a 9-volt battery. A 100K ohm resistor slows the release. A third activity involved a pendulum. Technology makes these experiments so easy!

Bill Fox and Rich West from Frances Marion University presented "Project Intermath and Interdisciplinary Applications." Bill and Rich, formerly at West Point, are connected to COMAP and have been using projects in their classes for years. This collection of projects were from their college

algebra course. They said they normally have 4-5 projects in a 42-lesson course! The projects are not trivial. They both extolled the virtues of projects, both for students and faculty. They said faculty should use them for formative and summative assessment. Students enjoy them because, among other things, they have a sense of accomplishment after completing them. You can see the famous "Terror Bird" project as well as the project on balancing a chemical equation at the COMAP website:

<http://www.projectintermath.com/products/modeling/>

I gave a presentation at the conference. You can download that power point, along with the linked Excel files and videos, at <http://www.waketech.edu/~rlkimbal/nctm03.ppt>

WHAT IS A LEARNING COLLEGE?

by Ted Panitz, Cape Cod CC

I just completed running an all day workshop for Southern State Community College where we investigated the concepts behind the Learning College and the Seven Principles of Good Undergraduate Education. SSCC has made a very strong commitment to adopting the principles behind the Learning College and the 7 principles by stating these two paradigms clearly in their strategic plan and by providing continuing faculty development in these areas. There is an interesting overlap between the two sets of principles in that both focus on the student centered paradigm versus teaching centered paradigms.

The Learning College calls for a strong student centered approach by focusing responsibility for student learning precisely where it should be, with the student. The seven principles also call attention to involving students actively in their learning. The two sets of principles provide an excellent framework for any institution interested in becoming student centered versus teacher/teaching centered.



I have placed some of the materials that I used during the workshop on my web site and they are available for anyone interested in the Learning College concept and the 7 principles.

The six principles behind the Learning College are at:

<http://home.capecod.net/~tpanitz/SSCC3.htm>

A comparison of the typical teaching paradigm and the Learning College paradigm are at:

<http://home.capecod.net/~tpanitz/SSCC1.htm>

Information on the 7 principles may be accessed at:

<http://home.capecod.net/~tpanitz/seven.html>

<http://home.capecod.net/~tpanitz/7ideas.htm>

PRESIDENT'S MESSAGE

by Mary Marsha Cupitt, Durham Tech CC

We send our deep condolences to Jay Martin on the loss of his cherished son, Chris, who lost control of his car while heading to soccer practice. It is with great sadness that NCMATYC donated \$100 to the Chris Martin Soccer Fund.

I am sorry to report to you that our NCMATYC Board is not going to continue to work to get labs imbedded into MAT 171, 172, 175, and 263. Please see the article on another page detailing the groundwork done in this regard. I simply did not believe that this effort will result in anything other than the status quo, or worse, the addition of four new courses to the Common Course Library that were not accepted into the Comprehensive Articulation Agreement. If you wish for the board to take up this project again, talk to your regional vice president and volunteer to head up the committee. Otherwise, the Board is focusing its attention on other initiatives. I regret getting your hopes up, but I truly believe that this is not a battle that we can win.

We hope that you are making plans to attend the upcoming NCMATYC Conference at Mayland CC in Spruce Pine, NC on March 12th and 13th. We have invited an artist from Penland Craft School to tell us how she utilizes mathematics in the design of her art. Our keynote speaker is a textbook author from California who attends our conference each year. And we are attempting to invite at least one additional out-of-state presenter to conduct a session. And this year, we are adding a series of 15-minute presentations on Developmental Mathematics, an area we have been neglecting for the past few years. We hope to have a social in the evening, though this will not be included in your conference fee so bring a few extra dollars. Be making your plans to come. Get the travel money allotted by your school committed to you before the spring. We, at Durham Tech, wrote up our requests in October.

The Board will soon submit a slate of candidates for your consideration. Please be sure to send in your ballot. It is time for fresh blood and fresh ideas. See you in March!

Conferences & Other Opportunities

MAA-AMS Joint Math Meetings Phoenix, AZ	7-10 January, 2004
17 th Annual Georgia Perimeter College Mathematic Conference Atlanta, Georgia	6-7 February, 2004
NCMATYC Conference Mayland, NC	11-12 March, 2004
T ³ Conference New Orleans, LA	11-14 March, 2004
NCTM National Conference Philadelphia, Pennsylvania	21-24 April, 2004
TMATYC Conference Gallatin, Tennessee	25-26 April, 2004
AMATYC Outer Banks Summer Institute Duck, NC	13-18 June, 2004
AMATYC Teacher Preparation Summer Institute Enumclaw, WA	July 8-12, 2004
AMATYC Hawai'i Summer Institute Hilo, HI	July 26-30, 2004
10 th International Congress on Math Education, Copenhagen, Denmark	4-11 July, 2004
AMATYC 30 th Annual Conference Orlando, Florida	18-21 November, 2004

PROJECT CANCELLED

by Mary Marsha Cupitt, Durham Tech CC

For the past year, your Board has conducted and evaluated a survey on the mathematics course offerings at the various community colleges. The results of that survey indicated a desire on the part of the membership to imbed the math labs into their associated courses. Specifically, the Board was challenged to convince the Transfer Advisory Committee (TAC) to imbed the labs into MAT 171, 172, 175 and 263.

To determine how to proceed, Chuckie Hairston and I met with Edith Lang, the mathematics coordinator with the System Office. Edith suggested that the best route was simply to develop new course descriptions and select new numbers for Pre-Calculus Algebra, Pre-Calculus Trigonometry, Pre-Calculus and Brief Calculus, leaving the old courses in place. She suggested that it would be necessary for us to find comparable courses in university catalogs that give four semester hour credits for Pre-calculus Algebra, Pre-calculus Trigonometry and Brief Calculus and five semester hour credits for Pre-calculus. She stated that we would need to get these courses accepted into the Common Course Library through the approval process developed by the System Office. Then we would present our new courses along with our evidence from the universities to the TAC and hope that they would vote to add these new courses to the Comprehensive Articulation Agreement.

A search of university catalogs and websites was revealing. There are very few universities offering Pre-Calculus Algebra, Pre-Calculus Trigonometry, or Brief Calculus as four-semester-hour credits courses. Nor do most of the universities offer a Pre-Calculus Course (MAT 175) for five semester hour credits. This course has been offered traditionally by the university as a four semester hour credits course.

The evidence is as follows. Listed next to each course are the schools that I was able to identify as offering a comparable course to the one that we would develop:

Pre-calculus Algebra: ASU and UNC-Ashville

Pre-calculus Trigonometry: None

Pre-calculus: ECU, NCCU

Brief Calculus: ASU, FSU, UNC-Pembroke, WCU.

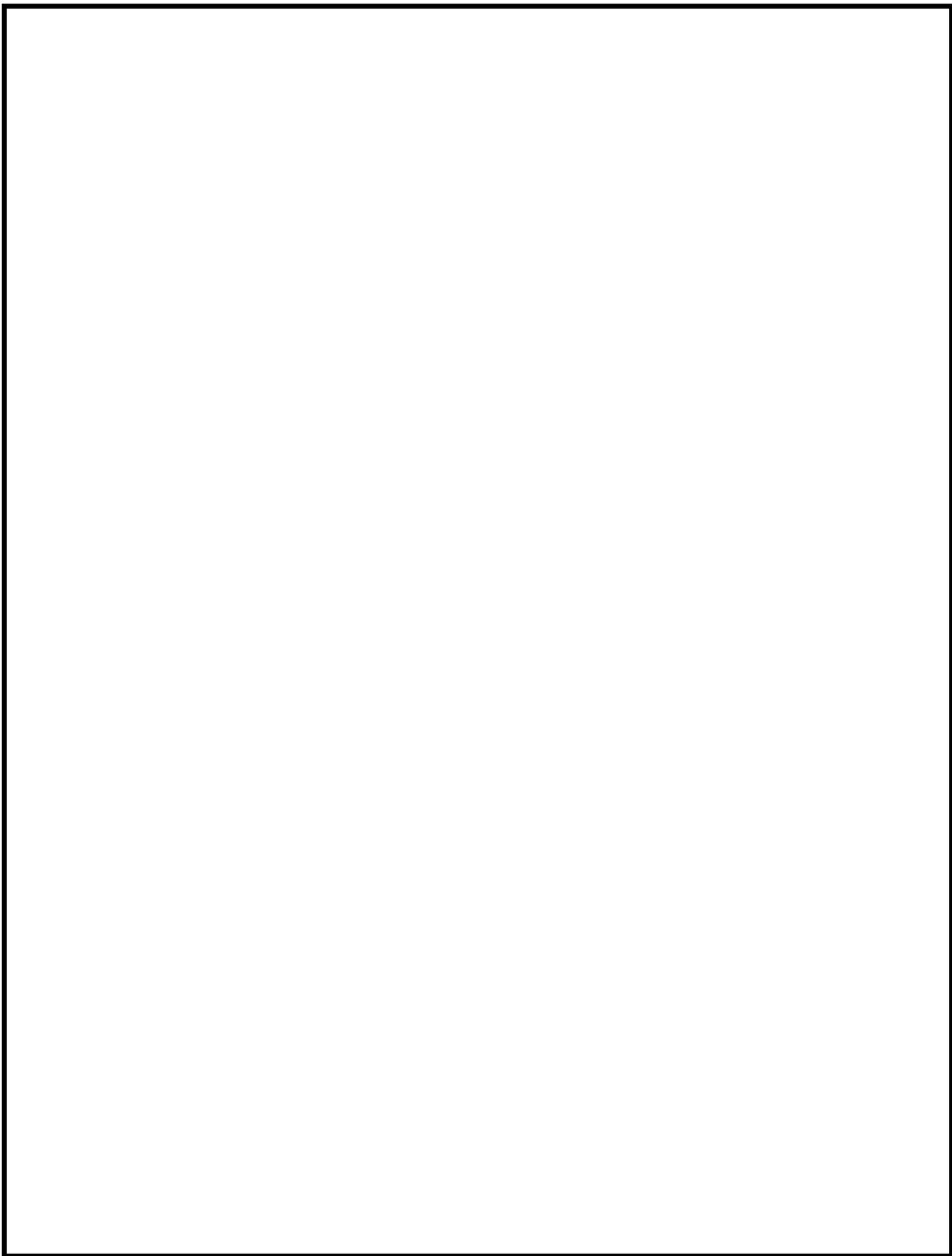
Clearly, very few universities offer these courses with extra hours for labs. Only 25% of the universities offer a course comparable to the Brief Calculus that we would want to develop. Some schools do offer a four- or five- contact hour course, but they give only three-hours credit for the course. Our system does not allow for that accounting of course work.

I do not believe that we can convince the TAC to accept these courses into the Comprehensive Articulation Agreement. And the thought of having yet another Pre-Calculus Algebra course in the Common Course Library was very distressing to me. As a result, the Board voted to discontinue this initiative and focus our efforts on initiatives that have a greater probability of coming to fruition.

FOOD, FUN AND THE FAB FOUR

by Cathey Jordan, Wake Tech CC

I recently had the opportunity to attend the California Mathematics Council for Community College's 31st annual Fall Conference in Monterey, California. While there, I attended the above named session by Lois Yamakoshi. Lois shared a variety of innovative, real-world examples for piquing the interest of her beginning statistics students early in the course in an effort to keep them coming back. One quick, easy example she shared dealt with a box of full-sized bags of M&M's. She passed the box around the room, asking us to remove one each and determine the weight of our particular package. The ensuing discussion led us to the conclusion that there was no "significant difference" in the weights of the packages as we simply compared ours to the one held by the person next to us (without actually weighing them). Lois's session was very enjoyable and fun!



AMATYC Outer Banks Summer Institute

by Mary Bradley, Southwestern CC

On June 8th, 2003, fifteen very fortunate participants for AMATYC's Summer Institute were making their way to the Outer Banks of North Carolina to take part in a week-long workshop involving the use of graphing calculators; more specifically, "Developmental Algebra Using a Function Approach." Five public school teachers and ten two-year college instructors representing eleven different institutions were about to embark on a journey that would be frustrating at times, but rewarding and fulfilling, as well as challenging and exciting. Ed Laughbaum of Ohio State University and Debbie Crocker of Appalachian State University conducted the workshop, and our week's adventure would take place at the conference room of the Army Field Research Facility in Duck, North Carolina.



The opening reception was held on Sunday evening at the home of Ed Laughbaum, one of the instructors for the workshop. This social time allowed everyone to meet, exchange some information, and get directions for the following morning. We were given directions to the facility and the necessary information for obtaining admittance into the workshop. We had been in contact with Ed Laughbaum on several occasions via email. He had made our housing arrangements, kept us informed of last minute changes and instructed us on what we should bring and what to expect of the workshop. He had also provided us with web addresses of several local points of interest in the Outer Banks, so we could "look around" before we arrived. This extra special "Southern" hospitality added to my enjoyment of the week; I felt like I was on vacation, and in a very special place.

We were able to tour the Army Field Research Facility (FRF) on the first day, and talk about some of the wonderful research projects in progress. The FRF is internationally recognized for its coastal studies, and has been in existence since 1977; It is managed by the US Army Corps of Engineers. Instruments at the facility constantly record the changing waves, winds, tides and currents. Central to the facility is a 1840 ft (560m) long pier and specialized equipment like the CRAB, LARC, and SIS. During the week, we were able to see the CRAB go out on two different occasions. It was amazing to me that we have so much information available at our fingertips with the computer, but to see the collection of data in progress brought it all full circle. If you ever have the opportunity to tour the research facility, it is well worth the adventure. Data is also available on the website that could be used for lab and class activities. The website is: <http://www.frf.usace.army.mil>

In order for us to take full advantage of our time each day, lunches were catered, giving us social time, which allowed us to interact with each other, and discuss the different aspects of our teaching assignments, as well as share information and ideas about the new aspects of what we were learning, and how we might incorporate more graphing calculator use into our curriculums.

During the first days of the workshop we learned some basics about the calculators; how to link them to one another to transfer information, how to ungroup files and even the very basics of operation for teachers who had very little or no experience with graphing calculators. We did several activities in class that would lend themselves to use in developmental math programs. Research is indicating that students who are taught algebra using a functional approach seem to have an edge over students who are taught algebra, using the traditional approach.

On Thursday of our week's adventure, we collected data, which was definitely the high point of the week for me. Using the TI-83 Plus Silver edition calculator along with a CBL, we climbed the 120-foot high tower, collecting data every 8 feet: air temperature, relative humidity, barometric pressure, and blood pressure and pulse rate. We later walked the length of the pier, (1840 ft) collecting temperature and relative humidity every 20 feet. We then took our data back to the conference area and stored it on a disk to take home with us for use in our classes. We made predictions, collected data, saved our data, and then graphed our results. We were able to look at other experiments and data collections in order to compare results. Everything we had talked about, and practiced with all week was finally coming together. What excitement! Imagine what fun our students could have with this equipment!

I am very fortunate to work at a community college, which supports and maintains an ongoing commitment to a research-based, application-oriented, and student-centered developmental education program, but implementing change is difficult, under even the best of situations. Technology and its rapid advances can be intimidating to all of us, at times, but our students are surrounded by technology and the need to perform in the real world. Computers and graphing calculators make it easy to produce tables and graphs for functions and to construct formulas for functions that model real life problems.

Graphing calculators and computers enable us to teach algebra from a functional approach, and the concept of function is a central theme of mathematics. True understanding comes from application. Why then should we not give our students every possible edge for competing in a global society?

I would strongly recommend this summer institute to anyone who is teaching algebra, and looking for ways to make mathematics more applicable to real life situations. It has been a very positive experience for me, and I was able to implement some change this semester. My students have been more excited about graphing and technology than ever before, and who's to say it can not be attributed, at least in part, to a function approach?

2001 – 2003 NCMATYC Leadership			2004 Conference
President-Elect Chuckie Hairston Wake Tech CC 919 662-3637 mchairst@waketech.edu	President Mary Marsha Cupitt Durham Tech CC 919 686-3300 cupittmm@durhamtech.edu	Past President Melissa Staley Central Carolina CC 919 775-5401 mstaley@gw.ccarolina.cc.nc.us	Mayland CC March 11-12, 2004
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Newsletter Editor Robert Kimball Wake Tech CC 919 662-3602 rkimball@waketech.edu	Webmaster Matt Sherrard Wake Tech CC 919 662-3423 mmsherra@waketech.edu	Visit NCMATYC Online at www.waketech.edu/ncmatyc	Program Chair Chuckie Hairston

2004 NCMATYC Conference
The *Presenter's Form* is ONLINE at:
<http://www.wake.tec.nc.us/~mmsherra/ncmatyc/home.htm>

Rob Kimball
Mathematics & Physics Dept.
Wake Tech Comm College
9101 Fayetteville Road
Raleigh, NC 27603-5696

Mail to: