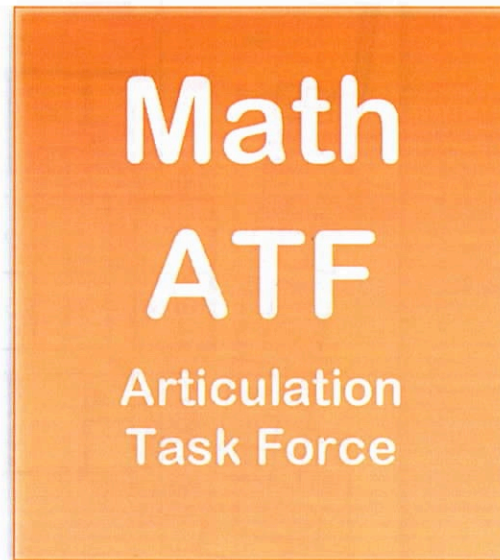
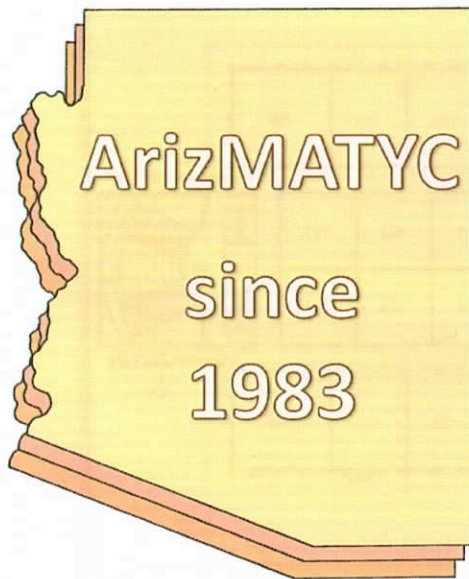


Fall 2016

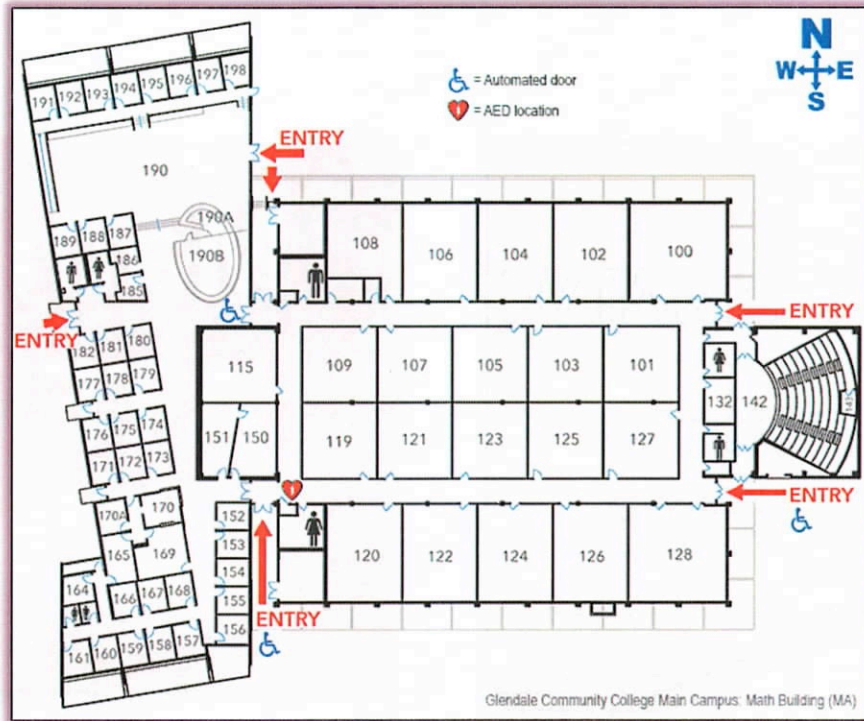


ArizMATYC and  
Math ATF Meeting  
at

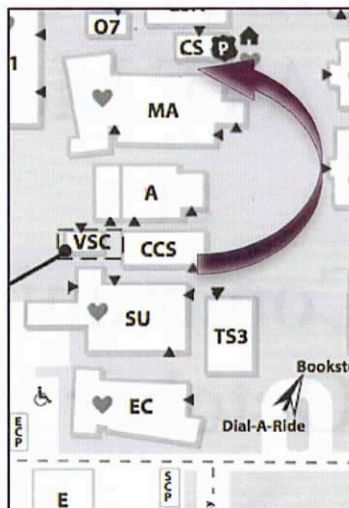
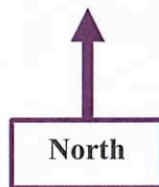
Glendale Community College  
Friday, October 14, 2016

# MAPS

## Mathematics Building Rooms



## GCC Student Union and Math Building



To get from the SU to the MA building, walk north three buildings.

# Schedule

**8:30-9:00 am Registration and Breakfast**

**Student Union-104**

Please join us for breakfast in the GCC Student Union (Room 104). Our thanks to Ben Weber of Cengage Learning who is providing the breakfast.

**9:00-9:15 am Welcome and Information**

**SU-104**

**Dr. Teresa Leyba Ruiz, Interim President of GCC**

**9:15-10:15 am Keynote Speaker**

**SU-104**

**Dyadic Fractions – and how to fold a tie**

**James Tanton, MAA Mathematics Ambassador**

I have a personal problem. I travel a great deal and often have to pack a tie in my suitcase. I can't lay the tie out flat in the case, nor can I fold the tie in half and lay out the folded tie, as the case is too short. So I fold the tie into quarters and lay this out instead. But then the tie develops a crease marks at the quarter positions and one of those creases shows right at my mid-chest when I later wear the tie. I figure that if I could fold my tie into thirds, then no crease would show and the folded tie would fit along the length of my case. But how do I fold a tie into thirds? (Actually, data shows that I tend to wear my ties with twenty-seven sixty-fourths of their length showing at front. Can I easily fold a crease at this position?)

Let's explore the remarkable mathematics of folding and together solve my personal tie problem.

**10:15-10:30 am Break**



**Pathways to College Mathematics**

MA-100

*Steve Roark, Cochise College*

Strands: Developmental Education, Undergraduate Mathematics

In 2011 Cochise College adopted an emporium model for our three developmental math courses. The impetus behind the change was to better prepare students for their college math courses. Now, only five years later, the math department has changed our course structure to a pathways model. The focus of the new plan is for each math pathway to have one developmental math course followed by a college level math course. This presentation summarizes our results using the emporium model, our planning of the pathways model and an initial report on the pathways results.

**The Wrinkles in Time**

MA-101

*Brian Beaudrie, Northern Arizona University*

Strand: History of Mathematics

Today most of us take for granted our modern 12-month, 365 (1/4) days calendar. But how was it developed? As it turns out, it took many thousands of years, involved several different cultures, and entailed several trials and errors to get the "almost" perfectly accurate calendar we use today. Come join us to learn about the people involved – some more famous for their non-mathematical exploits - and the mathematics, science, and politics behind the development of our calendar.

**One Obstacle to Proportional Reasoning: Operating Numerically Instead of Quantitatively***Matthew B. Weber, Arizona State University*

MA-124

Strands: Mathematics Education Research, Programs for Pre-service and In-service Teachers, Research Completed by Students (Undergraduate or Graduate)

We describe a study involving middle school mathematics teachers who are participating in a large-scale professional development program designed to improve their conceptual understanding of mathematics. The design and implementation of this study were guided by the research question: In what ways do teachers reason through tasks designed to elicit proportional reasoning? We highlight the issues that arose when some teachers performed numerical operations on values that they did not clearly connect to quantities.

**Transformations of Functions**

MA-125

*Matthew Michaelson, Glendale Community College*

Strands: Pure and Applied Mathematics, Undergraduate Mathematics

Textbooks usually approach transformations of functions as a long set of rules that must be memorized. However, transforming functions can be simplified to just a couple of ideas that can work for all functions in college algebra and can be extended to trigonometric functions as well. This workshop will explain how to do this by hand and with technology.

*Continued on next page.*

**Get to Know the TI-Nspire CX****MA-127***Veronica Carlson, Glendale Community College and Kim Thomas, Moon Valley High School*

Strand: Technology in Teaching

The TI-Nspire CX is a handheld graphing calculator that is a small computer. A unique feature of the TI-Nspire CX is dynamic linking across documents and multiple representations that allows students to interact directly with the math by seeing how manipulating one form changes all of the others. In addition, files may be created ahead of time to help students discover and understand mathematics in the palms of their hands.

**11:30 am-1:00 pm Lunch and Campus Reports****Student Union-104**

Please join us for lunch in the GCC Student Union (Room 104). Our thanks to Jessica Carey of Pearson who is providing lunch. During the Campus Reports we ask a representative from each campus to share what's new at their college.

**1:00-2:50 pm Math Articulation Task Force (ATF)****SU-104**

The Math Articulation Task Force, comprised of faculty from community colleges and universities, strives to keep the articulation process smooth for students by an ongoing dialog of issues and concerns of transfer students. All are invited to attend this important discussion.

**1:00-1:50 pm Breakout Session II****Math (MA) Classrooms****Changing Mindset in Students by Teaching Specific Mathematics Learning Strategies***Marcia Corby, Phoenix College***MA-100**

Strands: Developmental Education, Mathematics Education Research, Research Completed by Students

Many times struggling students look at mathematics instructors and do not understand how their instructor just seems to understand math while they do not. Some students see mathematics as a talent, which they do not possess. If an instructor can change the mindset of their students from a fixed to growth mindset, research has shown that motivation and success in math classes, can greatly improve. This presentation will offer specific ideas on how mindset can be changed, specifically focusing on teaching students the use of different learning strategies, and unique ways for instructors to present difficult developmental math topics.

**Teaching Mathematics in a Modified Emporium Environment****MA-101***Brian Beaudrie, Northern Arizona University*

Strand: Mathematics Education Research

This presentation will begin with a brief background description of what a modified emporium is, and how four freshman-level math courses (two of which are developmental) have been redesigned to fit in this environment, as each course has a slightly different design. Then, data that has been collected over the past four years will be presented discussing the effectiveness of the courses, and changes that have been made to increase effectiveness as a result of the data.

*Continued on next page.*

**Spice Up Your Teaching with Hot Tricks and Cool Stuff****MA-124***Phong Chau, Glendale Community College*

Strands: Developmental Education, Technology in Teaching, All level of math from arithmetic to Calculus

This talk will showcase some of my best ideas and examples that I often use to make It fun and effective for students to learn certain math concepts. Math jokes, math animations, card tricks, math videos, and especially math analogies are to be presented with topics ranging from arithmetic through calculus sequence. In particular, teaching with analogies is a great way to teach students many important concepts as well as to correct student's common mistakes and misconceptions. Come learn some fun ideas and have some laughs!

**Three Simple Mathematical Ideas Put to Creative Use****MA-125***Frank J. Attanucci, Scottsdale Community College*

Strand: Undergraduate Mathematics

In this presentation, I show how three simple mathematical ideas: (1) the Zero Factor Property, (2) the illicitness of dividing by zero, and (3) the parametric equations of a line can--with the help of a CAS (Maple)-- be put to use in the creation of interesting graphics and animations.

**New Features Along with Tips and Tricks for the TI-84 CE****MA-127***Kim Thomas, Moon Valley High School and Veronica Carlson, Glendale Community College*

Strand: Technology in Teaching

See the new features of the TI-84 Plus CE and learn tips and tricks to make an efficient use of this colorful handheld.

**2:00-2:50 pm Breakout Session III****Math (MA) Classrooms****Bringing Counting Techniques to Life****MA-101***Patrick Kimani, Glendale Community College*

Strand: Undergraduate Mathematics

Students struggle with finding sample spaces, and deciding when it is appropriate to use permutations, combinations or other counting techniques. Yet, without mature counting techniques, it is impossible to develop robust probabilistic reasoning. In this session participants will be engaged in solving a counting problem, exploring the mathematics within, and discussing the implications for teaching.

**New Practices in Finding Local Extrema****MA-125***Bill Kimball, Glendale Community College*

Strands: Pure and Applied Mathematics, Mathematics Education Research, Undergraduate Mathematics

Locating the local extrema of a function of a single variable usually involves the first or second derivative test. A new derivative test is presented that can be easily applied in many cases in which the second derivative test fails. Finding the local extrema of a constrained function of two or more variables usually involves the method of Lagrange Multipliers. A new method will be presented that will allow determination of extrema without explicitly finding the Lagrange Multipliers.

*Continued on next page.*

## **Partitive Division with Fractions: Two Students Attempt to Partition Water into $\frac{9}{4}$ Containers**

*Matthew B. Weber, Arizona State University*

MA-127

Strands: Mathematics Education Research, Undergraduate Mathematics, Programs for Pre-service and In-service Teachers, Research Completed by Students (Undergraduate or Graduate)

We describe a study involving twelve pre-service elementary teachers who were attending a community college. The design and implementation of this study were guided by the research question: In what ways do students reason through a sequence of tasks which progressively become more abstract, and which challenge primitive intuitions regarding partitive division? We highlight students' ways of thinking involved with division that are not easily generalizable, that favor numerical procedures over quantitative reasoning, and which are obstacles to the development of more robust meanings for division.

### **2:50-3:10 pm Afternoon Break**

**MA 100**

Please join us in MA-100 for an afternoon break. Grab some munchies and bottle of water. Check your email in the computer lab. Visit with colleagues.

### **3:10-4:00 pm Breakout Session IV**

**Math (MA) Classrooms**

#### **ArizMATYC Business Meeting**

**MA-101**

*Ana Jiménez, Pima Community College, ArizMATYC President*

Please join us for the ArizMATYC Business Meeting during which we discuss future locations for meetings, AMATYC delegate issues, and any concerns of members of the organization. All are welcome to attend.

#### **It's Not Class, It's Not Tutoring...It's Power Math Camp!**

**MA-125**

*Rachel DeAlejandro & Shannon Ruth, GateWay Community College*

Strands: Developmental Education, Placement and Assessment

Do you know students that place into developmental math and struggle to pass? Power Math Camp provides a free and personalized solution which prepares students to be successful in class or to score higher on the placement test, and is conveniently offered in three delivery methods. Come, learn of its impact, and leave ready to share this much-needed resource with students!

#### **Simulation and Computer Modeling in the Mathematics Classroom from Kindergarten through College: An Introduction to NetLogo**

*Mary Frances Sibayan, Pima Community College*

MA-127

Strands: Developmental Education, Technology in Teaching, Pure and Applied Mathematics

In the summer of 2015, I participated in LLNL's Teacher Research Academy in Computational Modeling Level 1 and 2. Here, I learned of the STEM Classroom Computer Modeling Project that is closely involved with the California State Standards in Mathematics. NetLogo was found to be a great tool for teaching science and mathematics through modeling and simulation. NetLogo is a multi-agent programmable modeling environment. In this presentation, I will introduce you to NetLogo and resources that are available for bringing computer modelling and simulation into the classroom.

We thank our sponsors  
for their continued support of ArizMATYC!

