

Math Department Position Justification Fall 2014

Nearly every student at Cañada
College takes at least one math class!!

Main Points

- Demand for math classes is large and growing
(25% of all students in a given semester)
- 6 FT and 15PT teach ~60 sections.
- Abundance of grant and state funded projects place demands on FT faculty.

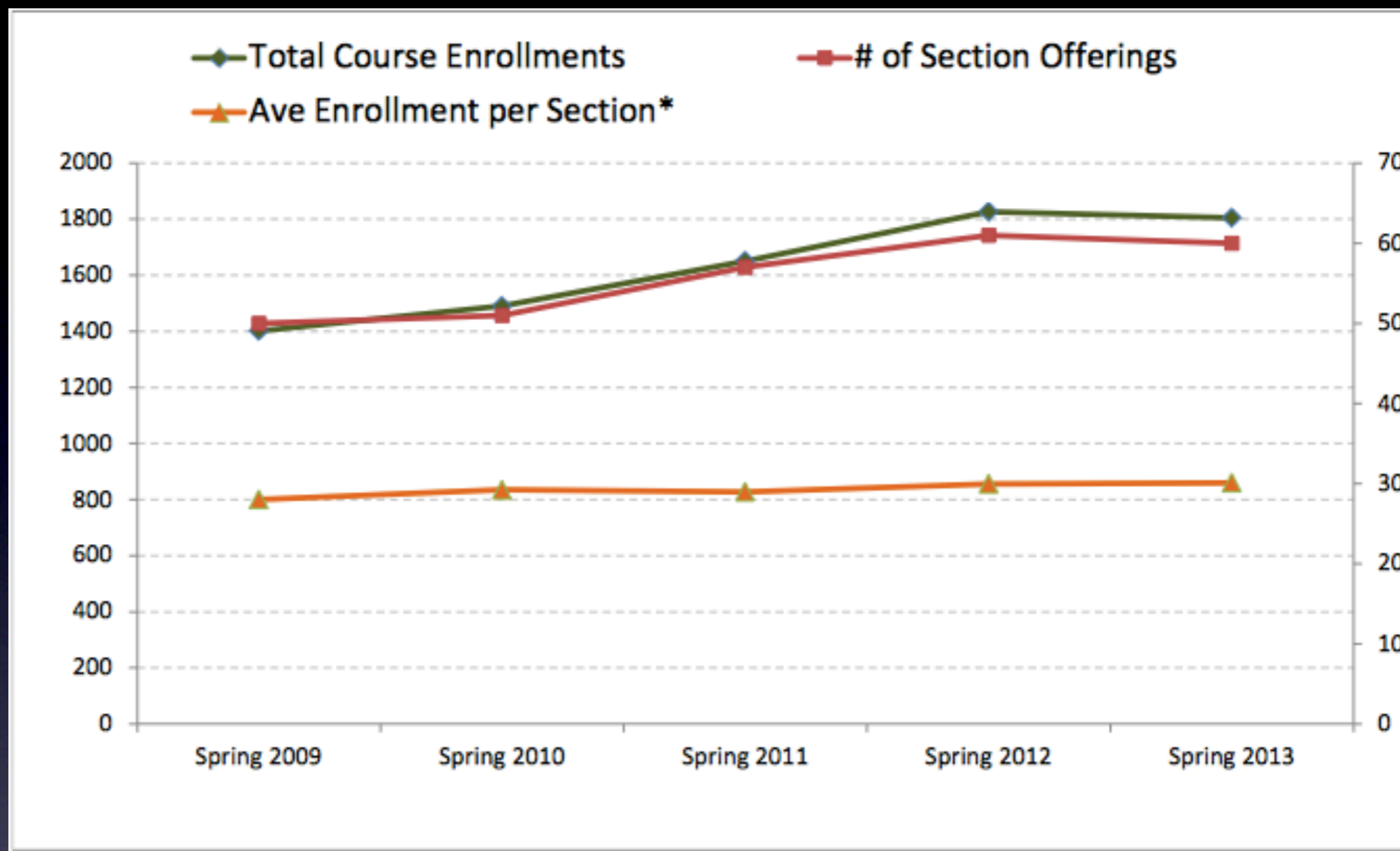


Table 2. Department Efficiency

Department	Metric	Term				
		Spring 2009	Spring 2010	Spring 2011	Spring 2012	Spring 2013
MATH	WSCH	7526	8020	8493	7857	7598
	FTES	250.9	267.3	283.1	261.9	253.3
	FTE	11.27	11.13	12.53	13.87	14.11
	Load*	668	720	678	567	539

*Color Coding: Peach shaded cells contain values at least 10% lower than the college average; blue shaded cells at least 10% above the college average.

Over the past 5 years the number of students whose goal is to transfer has gone from 1034 in 2008/09 to 1772 in 2011/12, an increase of 71% !

$$1772 - 1034 / 1034 = 738 / 1034 = 0.7197$$

Department	Metric	Academic Year				
		2007/08	2008/09	2009/10	2010/11	2011/12
MATH	Transfer (w/ or w/o Degree)	1034	1190	1371	1578	1772
	Career Dev (Degree, Certificate, License)	211	263	342	391	431
	Educational Development	261	200	341	357	313
	4 Yr College Student attending Cañada	350	342	337	271	184
	Undecided on Goal	141	192	219	275	270
	% Transfer (w/ or w/o Degree)	51%	53%	52%	55%	60%
	% Career Dev (Degree, Certificate, License)	10%	12%	13%	14%	14%
	% Educational Development	13%	9%	13%	12%	11%
	% 4 Yr College Student attending Cañada	17%	15%	13%	9%	6%
	% Undecided on Goal	7%	9%	8%	10%	9%

Data Definitions: All counts & percentages reflect the student's primary educational goal as indicated on their first application.

Note 1: Percentages do not sum to 100% because the Transfer category also includes some degree seeking students.

81% placed below college level '10-'12.

Placements January 2010 to December 2012				
MATH				
TOTAL TESTS TAKEN	PLACEMENT AND PERCENTAGES			
MATH 2010	MATH 811	MATH 110	MATH 120	MATH 125, 130, 140, 200, and 241 Transfer Classes
2033	732	622	304	261
	36.01%	30.60%	14.95%	12.84%

Full Time vs. Part Time

- We have 6 full time math instructors: Rich Follansbee, Michael Hoffman, Denise Hum, Evan Innerst, Ray Lapuz and Po Tong (Fall 2013)
- Full timers teach 36% of units and 31% of the classes
- There are at least 14 part-time Math instructors in a given semester:
- PT instructors include Adam Fahey, Teresa Zemla, Hongyan Meng, Tai Nguyen, Radu Toma, Judy Choy, Vera Klimkovsky, Rama Akkaraju, Alpona Banerjee, Elena Ivanova, Kazumi Tsuchiyose, David Monares, Danielle Ta, Bob Hanhan,
- In the learning center we will have an instructional aide and many student tutors: Requires faculty input, collaboration etc.
- Growing SI program: Requires faculty input, tutor recruitment and training, collaboration etc.

Collaboration and Commitment to the Campus Community

Math faculty have been involved in campus initiatives and committees:

- ESL Hiring (Summer 2014)
- Tenure Review in Counseling (Spring and Fall 2014)
- Michael Hoffman is now ACES (Basic Skills and Equity) chair.

Math Department Activities

On-line classes are offered in elementary algebra, intermediate algebra, statistics, and math for allied health. The first on-line math classes were offered in 1998



www

Math 120

Math 818

Math 123

Math Department Activities

Collaboration with other departments such as ESL, Astronomy, and Counseling.

Linking a Laboratory Science with Intermediate Algebra – A Progress Report

Denise Hum and Gabe Prochter, Cañada College, Redwood City, CA

Introduction

Many students struggle with math in general and a large number of our students test into lower levels of math than they expected. The original concept was to integrate laboratory experiences with a math class. The goal was to encourage group work and problem solving around the math to reinforce the math concepts. It was also hoped that some students would be encouraged to consider further study in STEM areas.

Methods

Denise Hum, a full-time math instructor and Gabe Prochter, an adjunct astronomy instructor, was given one treatment and assignments in the spring of 2019 to determine what math class to link to an astronomy lab class. Astronomy was chosen because of the qualitative nature of astronomy, the hands-on nature of the possible experiments and the fact that, at Cañada, the astronomy lab is a separate class and no curriculum revision would be needed for this pilot.

Working together, Denise and Gabe determined that the experiments with basic intermediate algebra. The curriculum in the math portion was enhanced with examples from astronomy and the experiments in the astronomy lab were selected and modified to illustrate the math concepts as well as the astronomy concepts.

The combined ASTR 101 with MATH 108 was scheduled to pilot in the spring of 2020. The classes were scheduled for Tuesdays because the independent scheduling of algebra classes has been very popular with the students. In addition, the classes were scheduled in the same room, so that Denise and Gabe could split up the time in a way that worked best for them and the particular experiments being done each week.

The pilot had an enrollment limit of 20 and was full by the first day of class. The enrollment on March 1 was 27.

Student Feedback

"I chose to enroll in the class because it seemed that I was going to have fun doing labs based on the math portion that we do, and it was actually right!"

"The fact that the math is somehow reinforced in the astronomy portion so makes you more prepared to your math class."

"I like being able to put the equations we learn to use in astronomy, it really feels good to make that connection. It builds my confidence in math."

"I think working in groups is the only way to do it, when we work together, we all try and get onto the same level of comprehension of what were doing..."

Things that are working

- This learning community, combining an astronomy lab and intermediate algebra, does not cost more than the individual classes and offering this in the future is simply a matter of scheduling. The only down side is that the enrollment limit for the algebra class is reduced from 40 to 20 to match the enrollment limit for the astronomy lab.
- Students enjoy working in groups. They have developed a sense of community and work together both in class and out.
- Students have a deeper understanding of the math that they are learning.
- Students like that they can see a use for math outside of math class.

Struggles


- Time & attendance – The classes meet from 9:10 am to 12:20 pm on Tuesdays and Thursdays. Regular attendance has been a struggle for students.
- Timing – Students would like a little more time between learning a math concept and applying it in astronomy.
- Some students are struggling to see the connection between the math and the astronomy.
- Students require more background knowledge in astronomy topics since only a few are also enrolled in the lecture course.

Conclusions

The students have overall responded positively to this learning community. They like the real-life math applications and were motivated that a less generalized course interest in science.

Here and this is the first semester that we are teaching these paired classes, we've learned a lot along the way.

Two Faculty One class



Math Department Activities

Honors sections have been offered consistently since it started.

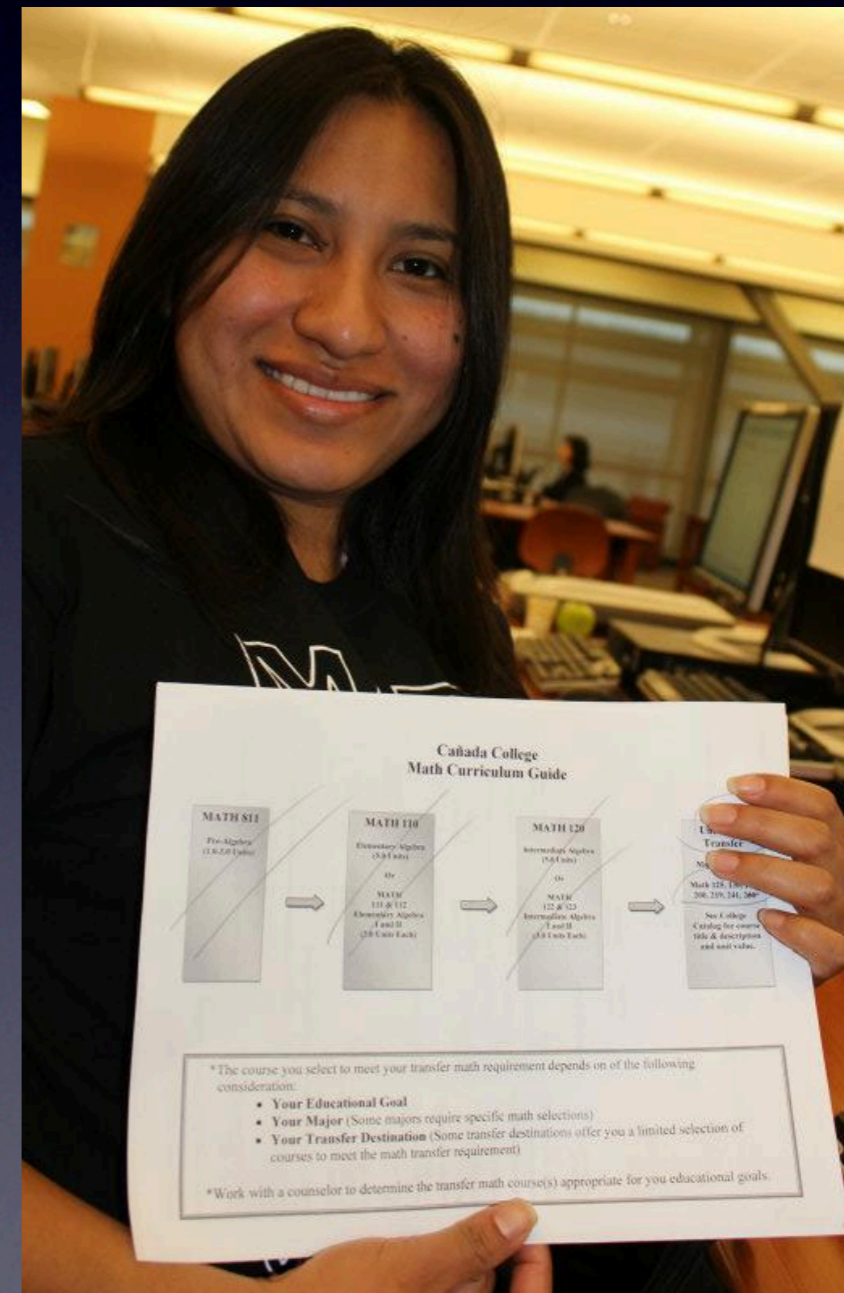
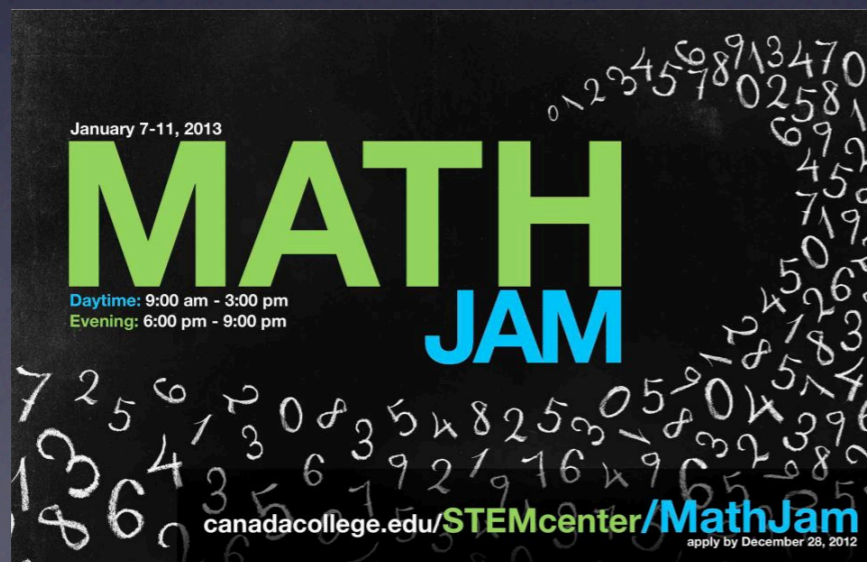


Math 253: Calculus III
Math 270: Linear Alg.
Math 275: Diff. Eqn.

Math Department Activities

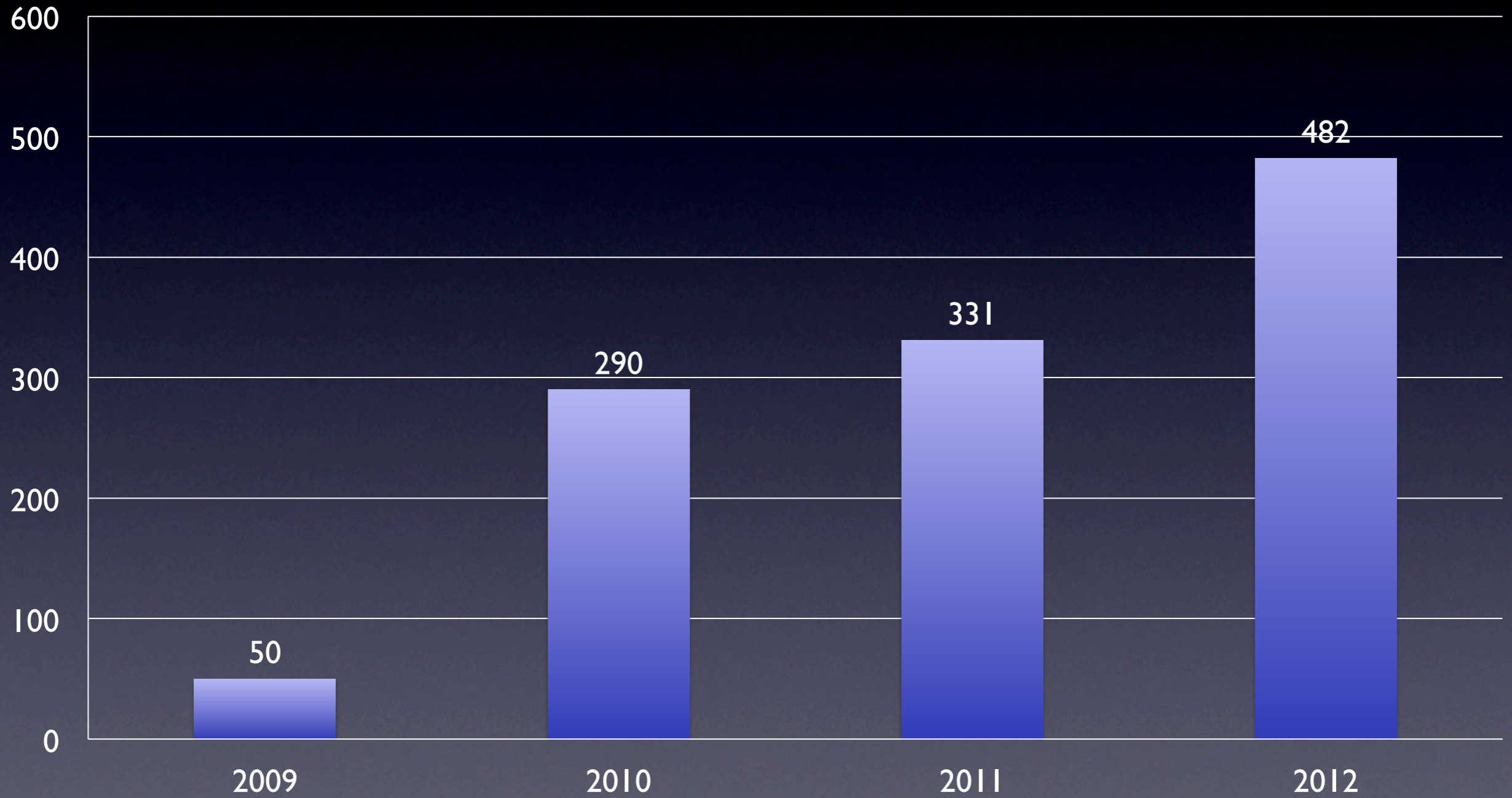
Math Jam has been going strong and growing since 2009.

STEM Center



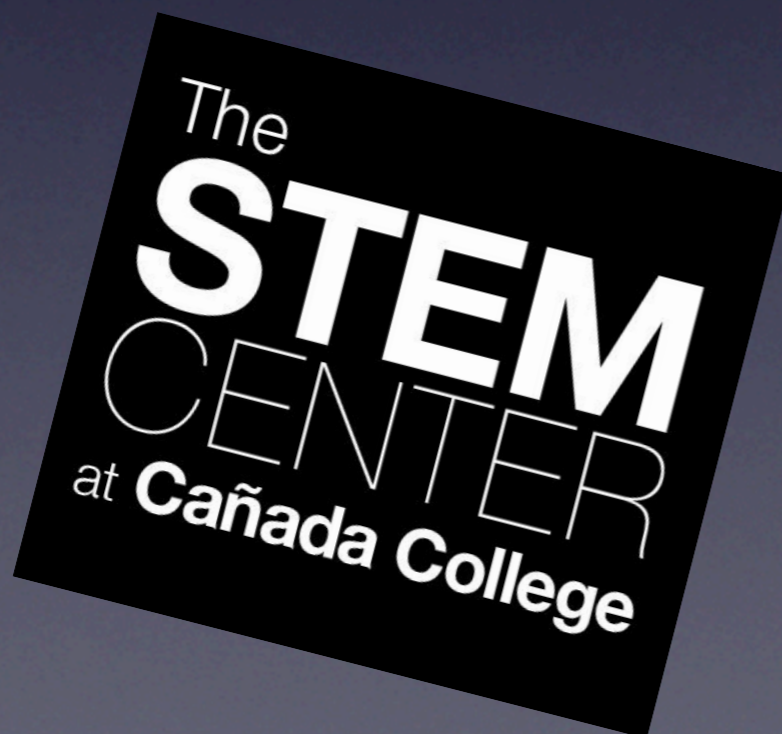
Growth

Math Jam Participants



Math Department Activities

STEM Center collaborations



The STEM Center at Cañada College

STEM Science
Technology
Engineering
Mathematics

SPEAKER SERIES
Wednesdays: 5:00-6:00 pm Location: Bldg. 6-102 Fall 2014

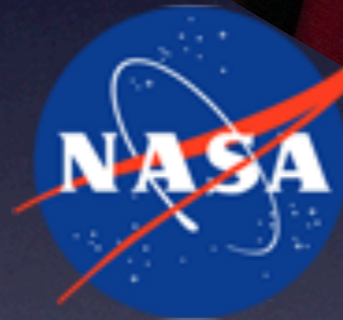
		Joy A. Franco Graduate Student, Department of Mechanical Engineering, Stanford University and Cañada College Alumni "From Bikes to Biomechanics: My pursuit of a career in STEM"		24	SEP
OCTOBER	1	Patricia Millán Senior Research Statistician Nielsen "Échale Ganas, Math is Beautiful"			
	8	Ron Freund Chairman, Electric Auto Association "Living with EV and PV"			
	15	Devin Prouty PhD Licensed Clinical Psychologist, founder of Granite Psychology / Research Psychologist at SRI International "Swimming Lessons to Scientist"			
	22	Sarah B. Shugarts, PhD, DABCC, CCS Scientific Director, Chemistry at Kaiser Permanente "You Never Know Where Life Will Take You: How a Backwoods Girl Ended Up In Sunny San Francisco"			
	29	Marius Cătălin Iordan Ph.D. Student in Computational Neuroscience, Stanford University "Uncovering How the Human Brain Uses Categories to Describe and Make Sense of the World"			
		Julissa Ramirez Industrial Engineer / Intel Corporation "From the Arts to STEM- My journey to Engineering"		5	NOV
		Kimberly Budil PhD Vice President for Laboratory Management at University of California Office of the President		12	

Math Department Activities

Reorganizing Trig and Precalculus
sequence (NSF Grants)

NASA curriculum.

Math Jam Curriculum



Math Department Activities

Basic Skills:

- ESL collaboration
- Reading Apprenticeship
- Alignment w/Common Core

Factoring Jigsaw
Break it up and Break it down. MATH JAM! Summer 2011 Name: _____

♠: Quadratic Trinomials Pick two problems to demonstrate to your *home* group. How could one identify type of problem in the future?

1. Factor completely and Check answers by multiplying!

(i) $x^2 + 5x - 14$

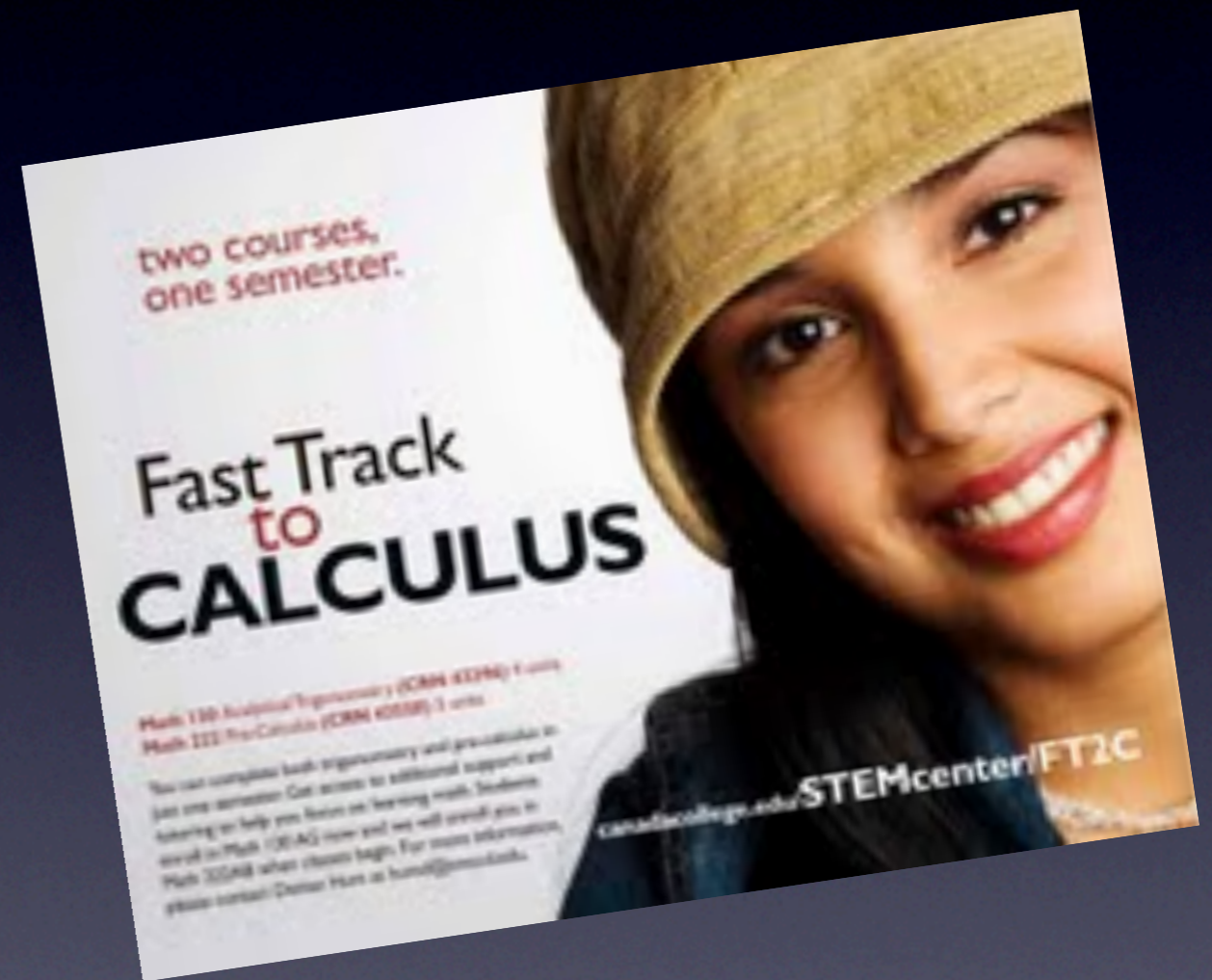
(ii) $2x^2 + 11x + 15$



Math Department Activities

Accelerated STEM Paths:

algebra/trig/precalculus



Math Department Activities

Acceleration Initiative:
Path to Statistics

Path To STATISTICS
Complete the math transfer requirement in 2 semesters

Math 879CA - 6 units
CRN 43726 M-TH 9:45am-11:00am
This accelerated course prepares students for transfer-level Statistics. In just two courses:

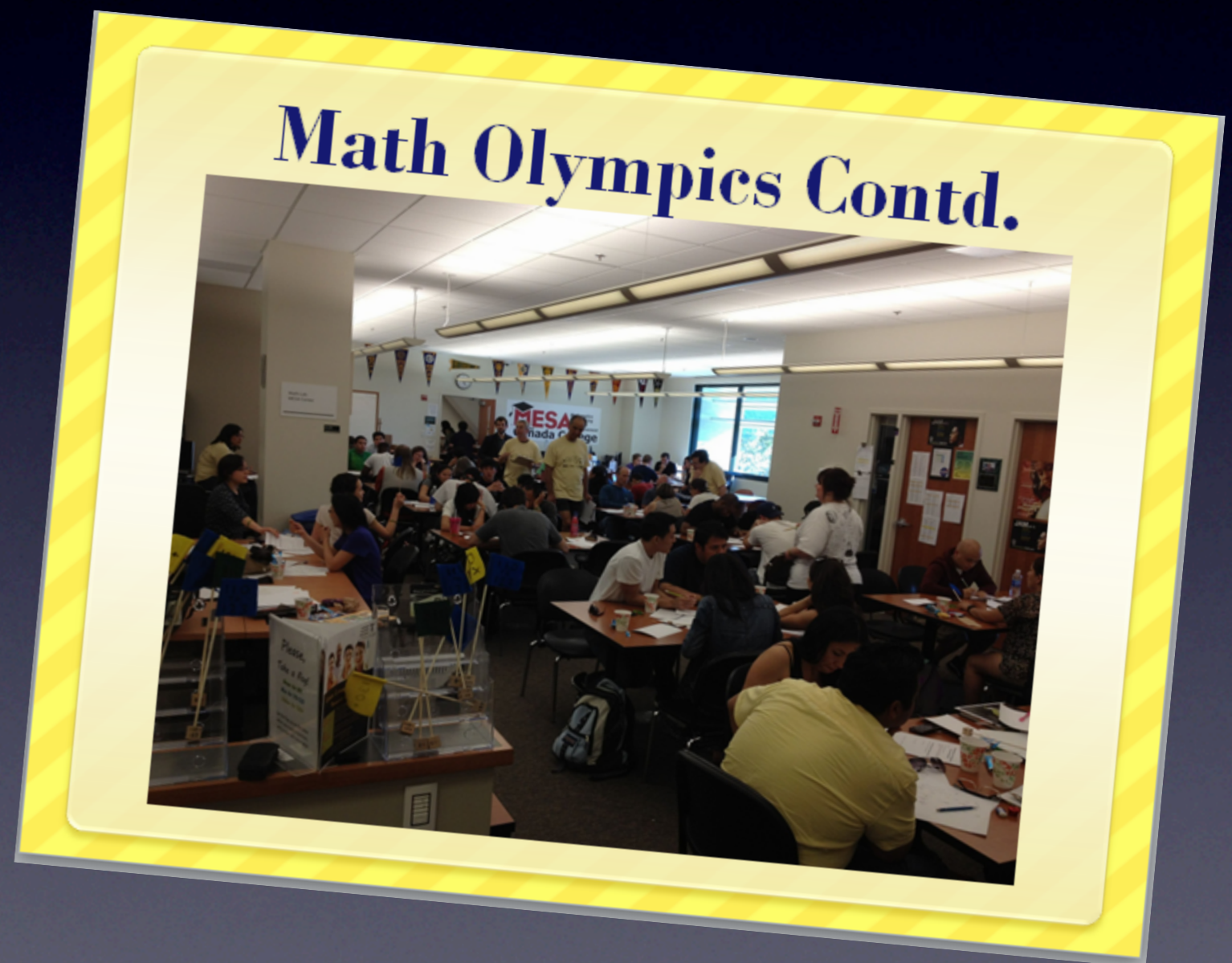
Math 879 - Path to Statistics
Math 200 - Probability and Statistics
you can meet the math requirement for transfer. This course is NOT for Science, Technology, Engineering, Math (STEM) or Business majors. Note: This course is a prerequisite for transfer level Statistics and does not transfer to CSU or UC.

Prerequisite: Math 811 or appropriate score on District math placement test.

For more information, contact Professor Lapuz at rlapuz2@my.smccd.edu

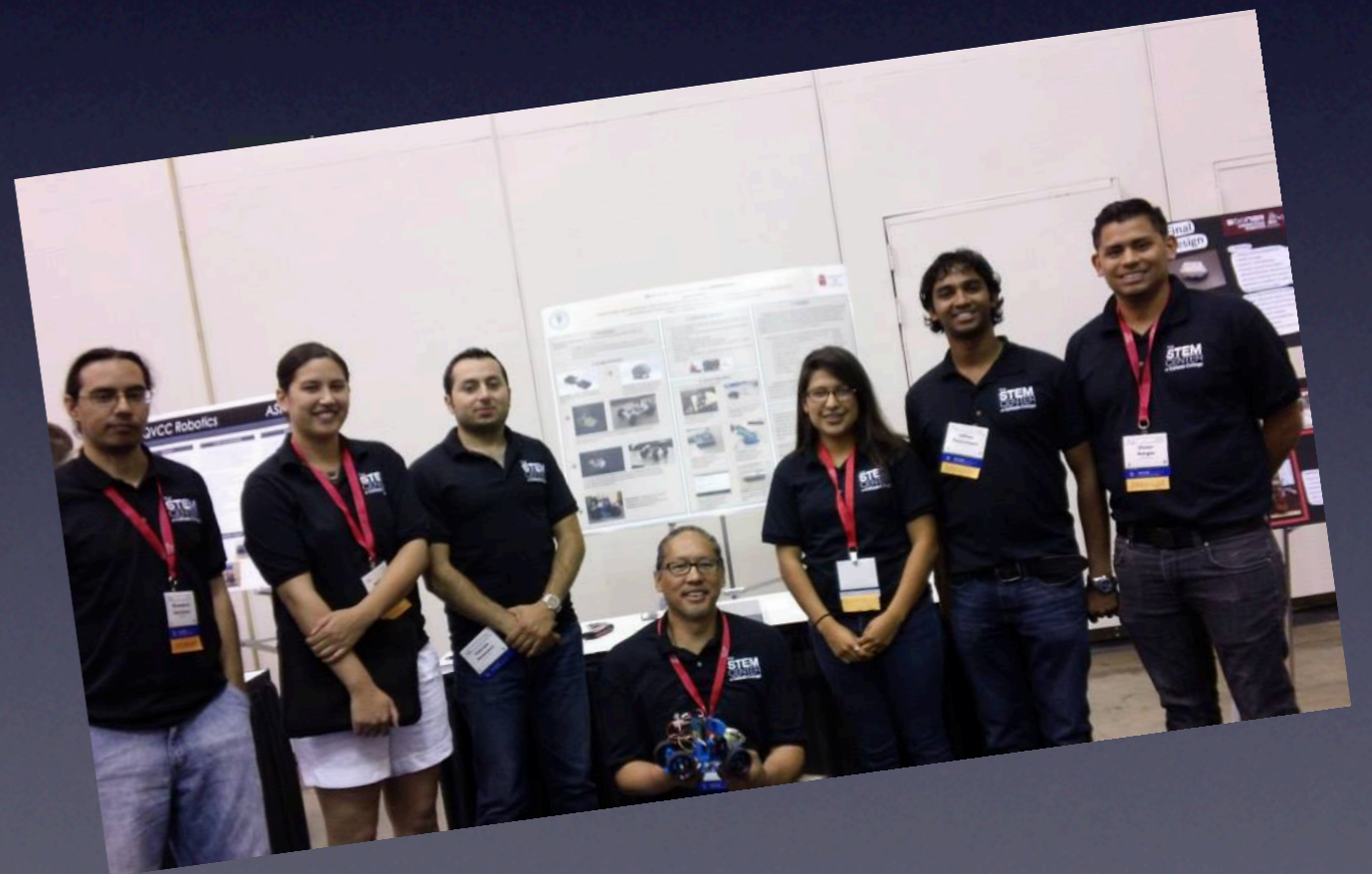
Math Department Activities

Math Club.



Math Department Activities

Robotics Club.



Department Initiatives

In recent years our focus has been on improving our success in the basic skills courses and we will continue to try and improve our results.

- Mastery level testing
- Increased student contact hours
- In-class tutoring (SI)

We are constantly trying to improve retention and success of the STEM students

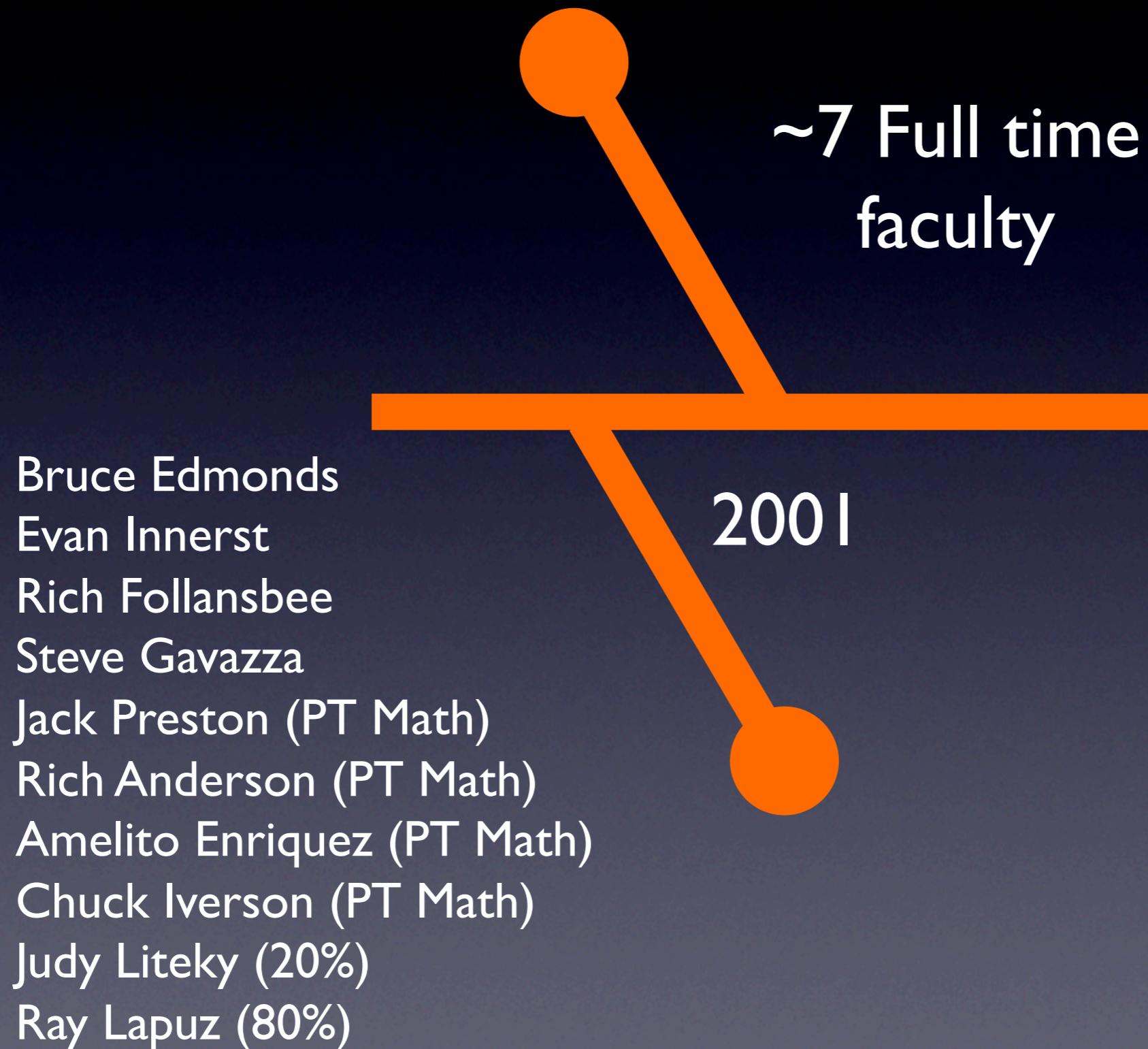
- STEM Center and MathJam
- Acceleration

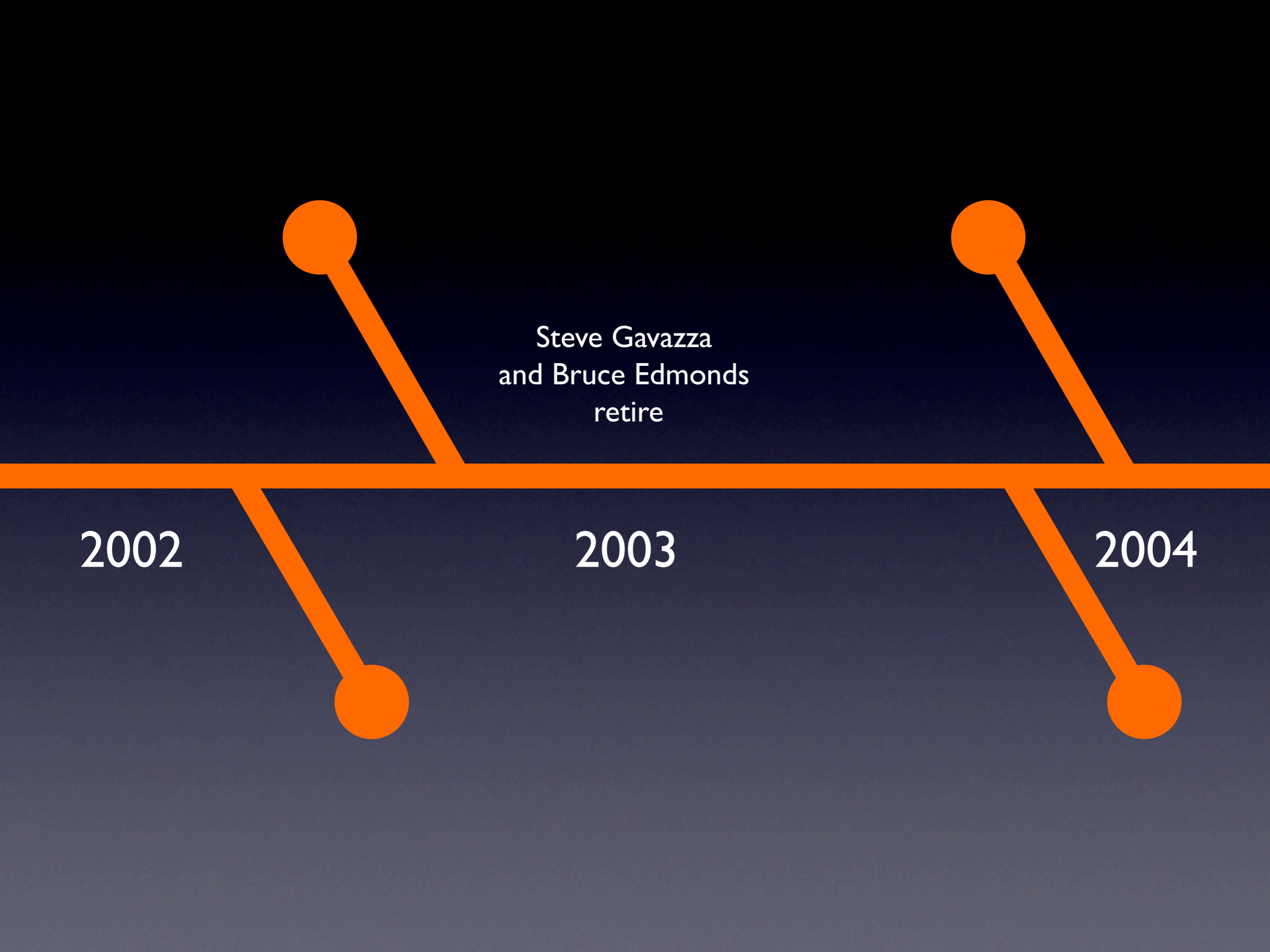
Most of our other transfer students take statistics

- Path to Statistics

- To be successful and carry out all of these initiatives, we need additional full-time faculty
- Without a new hire, we will continue to pursue these goals, but at a significantly slower pace

Evolution of the Math Dept





2005

2006

2007

Rich Anderson
retires
May 2006

Judy Liteky
retires
May 2007

Denise Hum
Hired
Aug 2007



AS degree now requires MATH 120

Position justification presented to
CPC Fall 2010

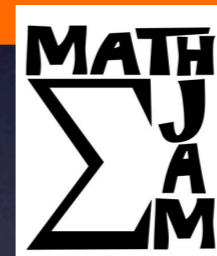
Jack Preston retires
May 2008

Spring 2008 is last
semester Dr. Enriquez was
available to teach math

MathJam! Begins in 2009

2008

2009



2010

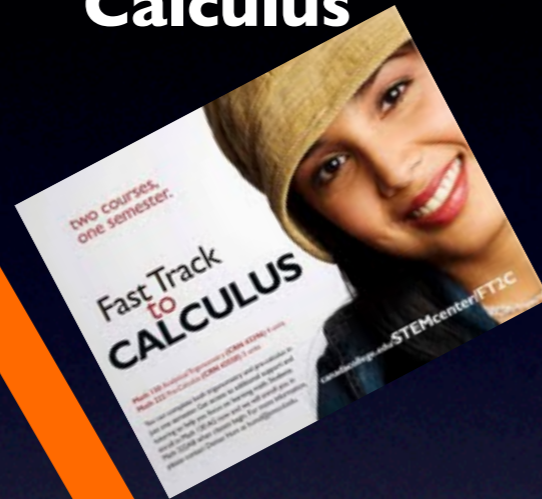
Position justification presented to
CPC **denied** presented to
CPC Fall 2010

31% of the classes are taught by full time faculty

Path to Statistics Initiative



Fast Track to Calculus



Chuck Iverson Retires
Dec 2012



2011

Michael Hoffman Hired
Feb 2011



2012

2013

Po Tong Hired
Fall 2013



Evan Innerst
Rich Follansbee
Ray Lapuz
Denise Hum
Michael Hoffman
Po Tong

6 Full Time Faculty

2014

???
Hired
2014

2015

2016

