

Cuyamaca College

Math Pathways

Working to deliver education's
promise

Math Pathways Goals

- Annihilate the achievement gap
- Increase the proportion of incoming students who complete a degree-level or transfer-level math course in much less time
- Increase the proportion of students who transfer and/or earn a degree or certificate

Structural Bias

First enrollment in remedial course	% of students who successfully complete college-level math course	
	English	Math
1 level below transfer	48%	35%
2 levels below transfer	34%	15%
3 levels below transfer	19%	6%

Cuyamaca College: Basic Skills Cohort Tracker, fall 2009 through spring 2012

Structural Bias

	Enter math pipeline 3 or more levels below transfer	
	English (writing)	Math
White	8%	35%
Black	25%	61%
Hispanic	17%	53%
Asian	19%	32%

Source: Perry, M.; Bahr P. R.; Rosin, M.; & Woodward, K. M. (2010). *Course-taking patterns, policies, and practices in developmental education in the California community colleges*. Mountain View, CA: EdSource. Compiled from Table 3 (p. 138) and Table 9 (p. 144).

High Leverage Strategies

- Change placement policies to allow more incoming students to enroll directly in transfer-level math
- Accelerate remediation
- Design and implement concurrent-enrollment support models (a.k.a. co-requisite models)

Change Placement Policies

Use meta-majors to place students in the appropriate math pathway

- General
- Business
- STEM
- Technical
- Education

Change Placement Policies

Disjunctive placement with MMAP rules

- Transfer level with support (non-stats)
Algebra II w/ C or better & GPA ≥ 2.8
- All students are eligible for:
 - Intermediate Algebra with support
 - PreStatistics
 - Transfer-level Statistics with support

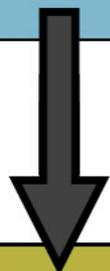
Accelerate Remediation & Concurrent Support Models

One or two course sequences

- PreStats followed by transfer-level statistics
- Intermediate Algebra with concurrent-enrollment support followed by a transfer-level course
- First-level transfer course with concurrent-enrollment support

General Education Pathway

**PreStatistics
(6 units)**



**Statistics
with or w/o support
(4 - 6 units)**

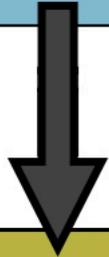
OR

**Statistics
with or w/o support
(4 - 6 units)**

Business Pathway

Highest to lowest placement →

Business Calculus
with or w/o support
(4 - 6 units)



Statistics
(4 units)

Intermediate Alg
with or w/o support
(5 - 8 units)



Business Calculus
(4 units)

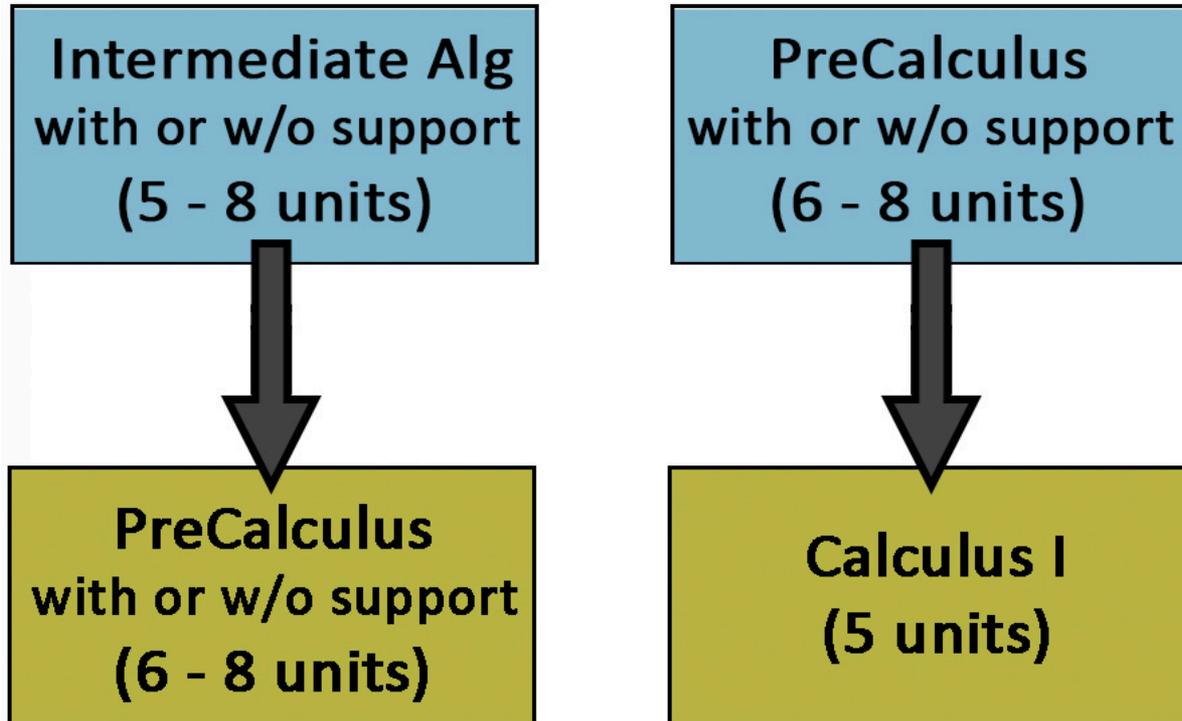
Statistics
with support
(6 units)



Business Calculus
with support
(6 units)



STEM



Schedule Changes

	Fall 2015	Fall 2016	Fall 2017
2+ levels below	18	NA	NA
PreStatistics	3	3	4
1 level below	15	19	15
Transfer	29	37	54
Total	65	59	73

Access: Fall 15 vs Fall 16

Fall 2015: White students were 3 times more likely to have access to transfer-level math than were black students (27% vs 9%) and 1.3 times more likely than Latino students (27% vs 21%).

Fall 2016: 84% of incoming students have access to transfer-level math (regular and concurrent enrollment support models combined).

White, black, and Latino students have comparable access (84%, 73%, & 85%).

Access: Fall 15 vs Fall 16

Incoming Students	Fall 2015 Transfer level	Fall 2016 B-STEM (w or w/o support)	Fall 2016 Statistics (w or w/o support)
All Students	24%	62%	84%
Black	9%	49%	73%
Asian	36%	79%	90%
Hispanic	21%	62%	85%
White	27%	62%	84%

Transfer Math Success Rates

Fall 2013 Cohort (2 years):

- 36% of students who placed 1 level below successfully completed transfer-level math.
- 19% of students who placed 2 levels below successfully completed transfer-level math.
- 4% of students who placed 3 levels below successfully completed transfer-level math

Transfer Math Success Rates

Fall 2016 Cohort:

- One semester completion rates tripled (84 in fall 2014 compared to 257 in fall 2016).
- Course success rates held steady (64% for transfer-level math vs 69% for transfer-level math with concurrent-enrollment support).
- One-year throughput rates for first-time math students increased almost 7 fold (from 10% to 67%).

Transfer Math Success Rates

- Placed 1 level below: 66% complete in 1 year (Math Pathways) vs 36% in 2 years (traditional)
- Placed 2 levels below: 70% complete in 1 year (Math Pathways) vs 19% in 2 years (traditional)
- Placed 3 levels below: 56% complete in 1 year (Math Pathways) vs 4% in 2 years (traditional)

Transfer Math Success Rates

Traditional Placement	Fall 2013 Transfer Math (two years)		Fall 2016 *Transfer Math with support	
Transfer level	247	79%	35	77%
1 level below	216	36%	89	69%
2 levels below	281	18%	63	68%
3 levels below	79	4%	15	47%

* First-time students (1 semester)

Statistics Success Rates

Traditional Placement	Fall 2013 Transfer Math (two years)		Fall 2016 *Statistics with support	
Transfer level	247	79%	12	100%
1 level below	216	36%	54	78%
2 levels below	281	18%	58	69%
3 levels below	79	4%	13	46%

* First-time students (1 semester)

B-STEM Success Rates

Traditional Placement	Fall 2013 Transfer Math (two years)		Fall 2016 *Business-STEM with support	
Transfer level	247	79%	23	65%
1 level below	216	36%	38	55%
2 levels below	281	18%	9	78%
3 levels below	79	4%	5	40%

* First-time students (1 semester)

Paradigm Shifts

The activity-based math classroom

- Contextualized teaching & learning
- Focus shifts from the teacher to the learner
- Just-in-time remediation
- Productive struggle with brains-on activities
- Intentional support for the affective domain

Next Steps

Math with “corequisite” ESL support

- Intermediate Algebra (light) with concurrent-enrollment support in ESL
- ESL course designed to support math
- Degree-level math
- Followed by a transferable math course with support

Resources & Contacts

- Cuyamaca Math Pathways materials provided in my next session
- Tammi Marshall, Math Department Chair
 - Tammi.Marshall@gcccd.edu
- Terrie Nichols (that's me), Math Faculty
 - Terrie.Nichols@gcccd.edu

Heads Up: Tammi is super responsible with email.

You Do The Math!

SIMPLE MATH PATHWAYS!
bit.ly/ccpathways

 The Stats option
is perfect for
non-STEM and
non-Business
majors!

Transfer-level Math
(includes Stats)

Intermediate
Algebra

Elementary
Algebra

Pre-Algebra

Basic Math

Transfer-level Math

Int Alg w/ support
Math 10/110

Transfer-level Math
w/ support

(Cuyamaca College Pathways)

(Traditional Pathway)

Finish in 1-2 semesters

or 5 semesters?