



# Developmental Mathematics Program: Systemic Progress at a Four-Year University

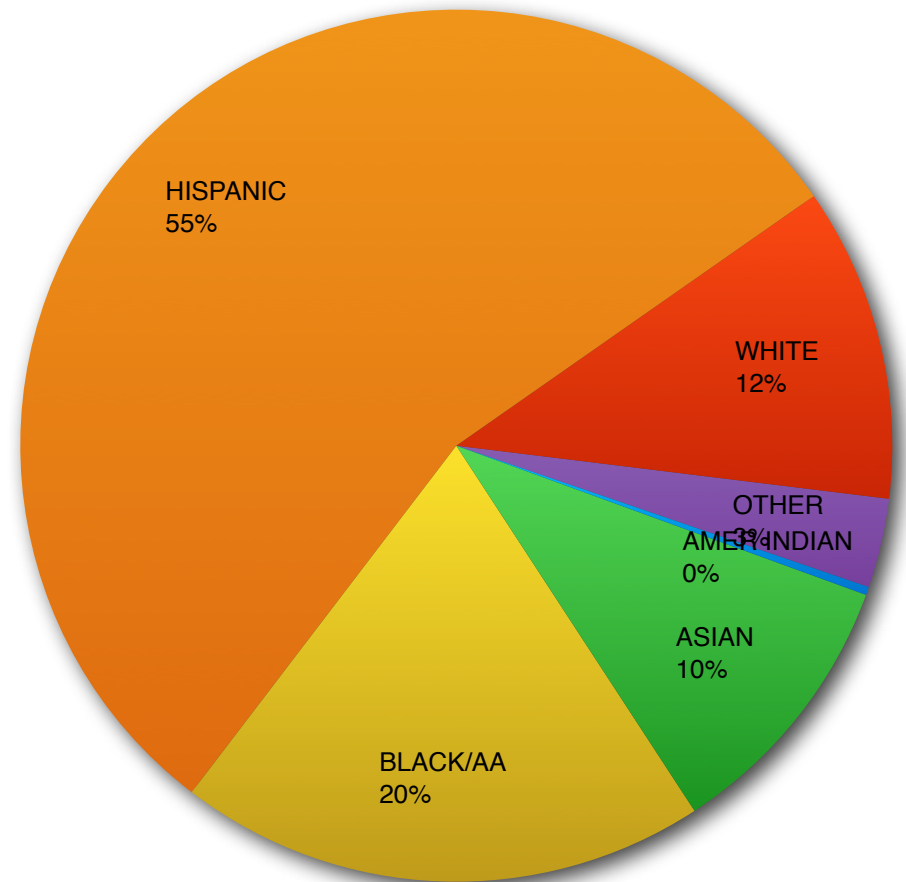
2012

John Wilkins

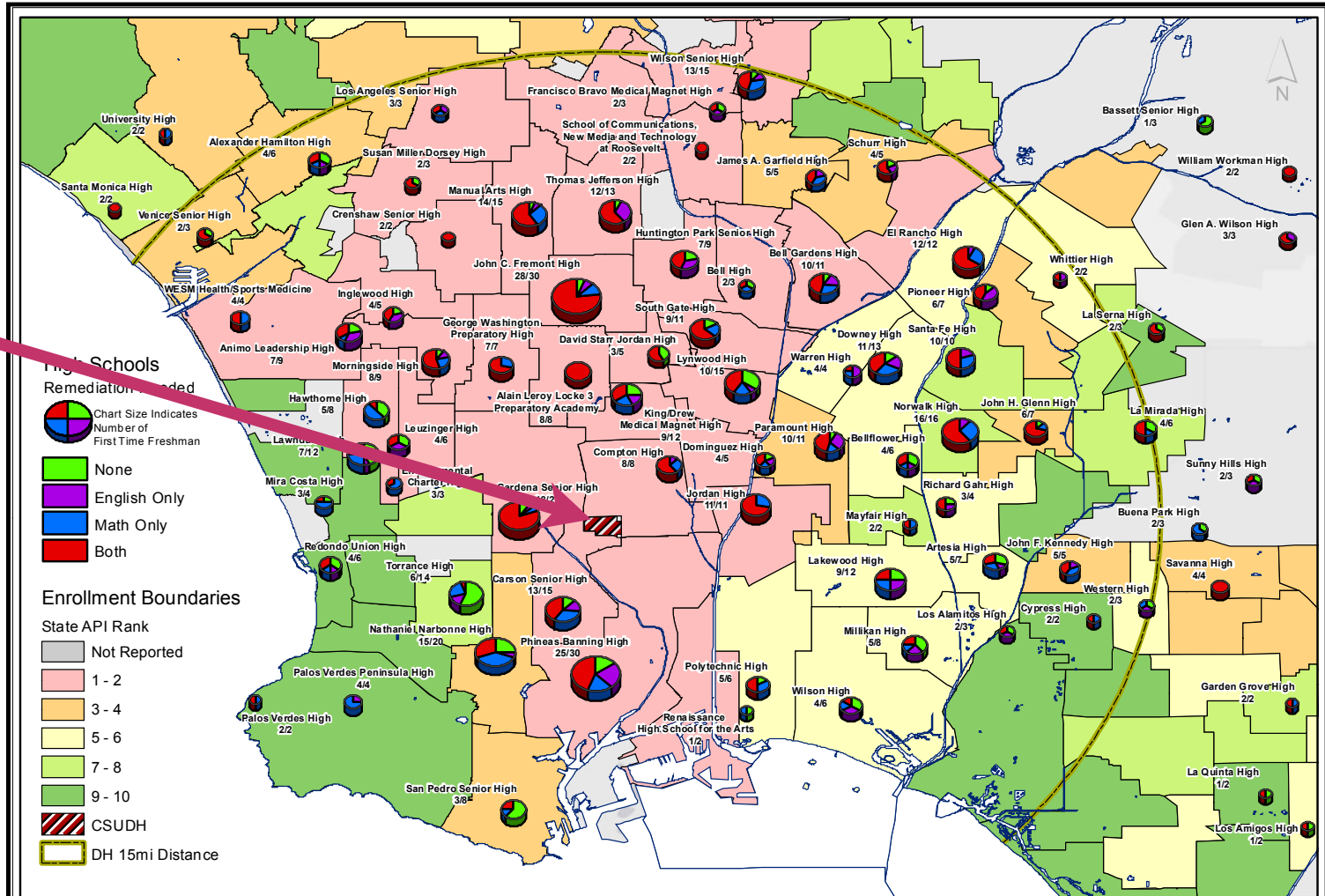
Silvia Kang

[www.csudh.edu](http://www.csudh.edu)

- First time freshmen 1214
- Undergrad transfer 1786
- Total enrollment 13,692
- FTES 10,094



CSUDH

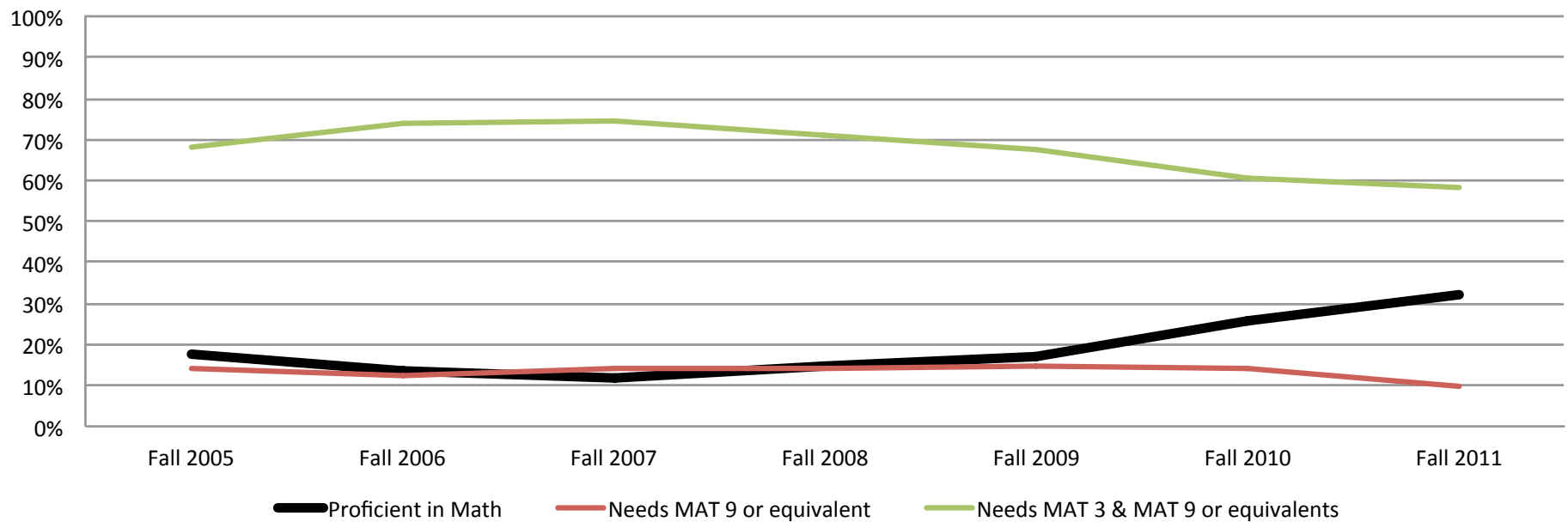


Notes: Numbers listed below school names indicate Dominguez Hills FTF needing remediation/ total FTF sent. The chart size is relative to the number of FTF. Data for this map was provided by Office of Institutional Research and California Department of Education. Boundaries and API scores are for the main high school in the area. Private high schools, alternative high schools and schools sending less than two FTF are not shown on the map.

**CSUDH FRESHMAN REMEDIATION  
BY HIGH SCHOOL - FALL 2011**  
Students Needing Remediation/Total First Time Freshman



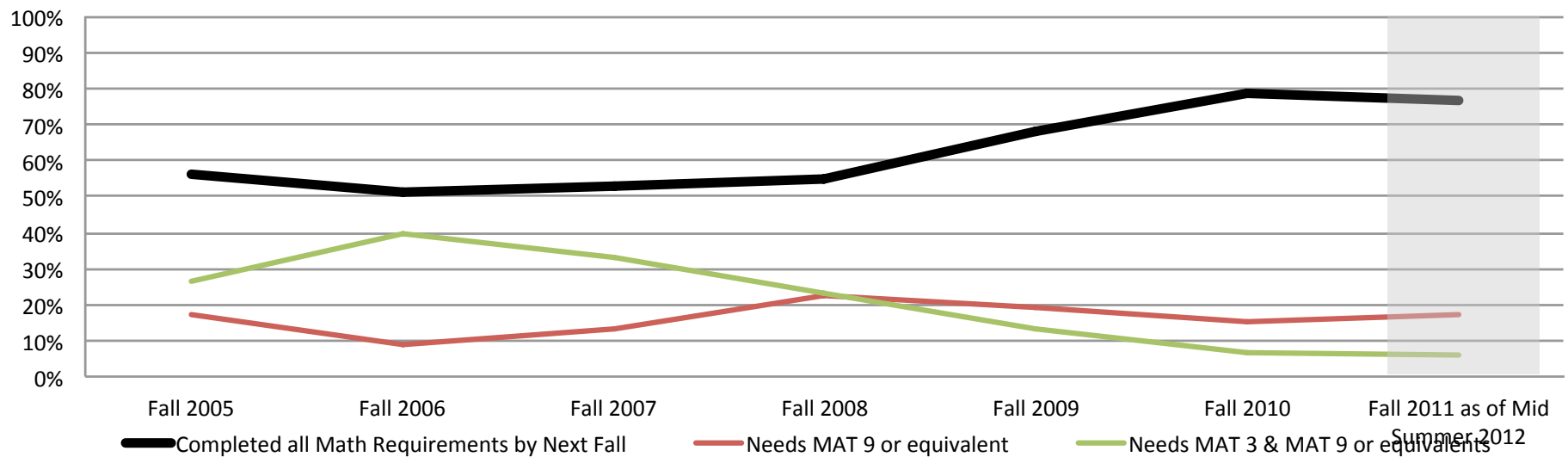
## Fall First-Time Freshmen Math Level Fall 2005 to Fall 2011



Mat 03 = Beginning Alg

Mat 09 = Intermediate Alg

## Fall First-Time Freshmen Math Remediation Fall 2005 to Fall 2011



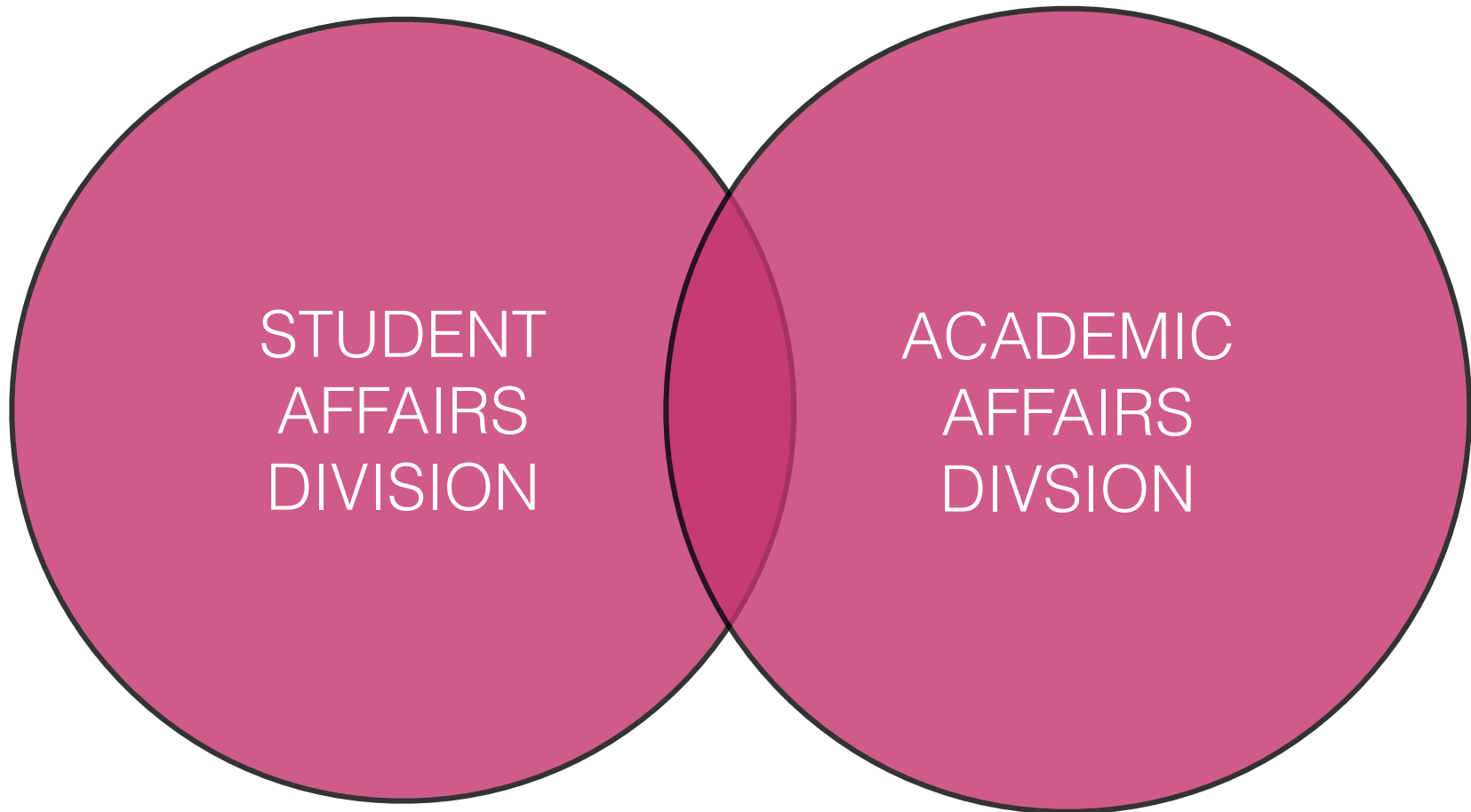
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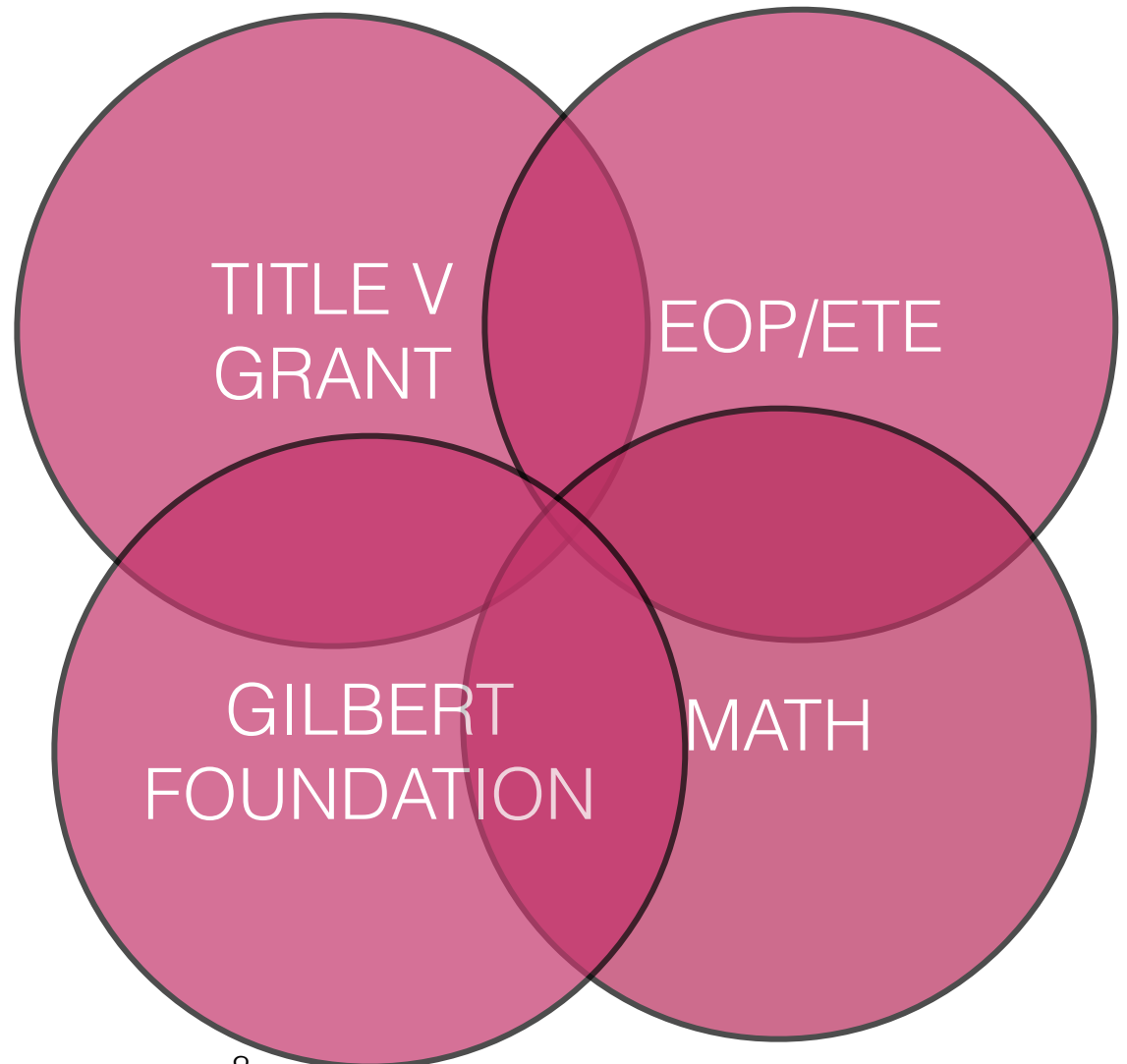
# CAMPUS RESOURCES



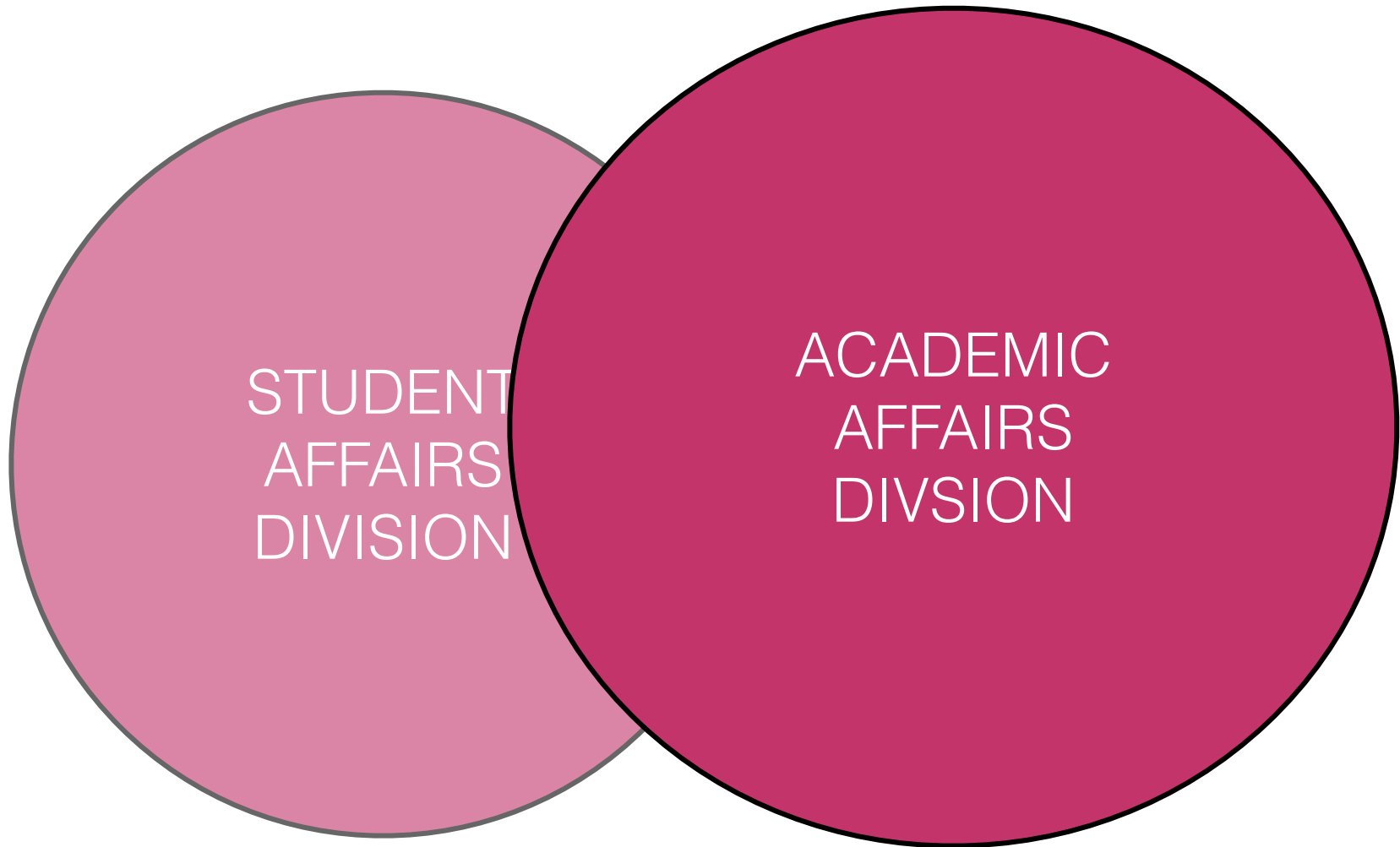
# Campus Assets



# Campus Assets







# Curriculum

- Beginning Algebra
- Intermediate Algebra
- Fusion GE Courses
  - STAT
  - Finite

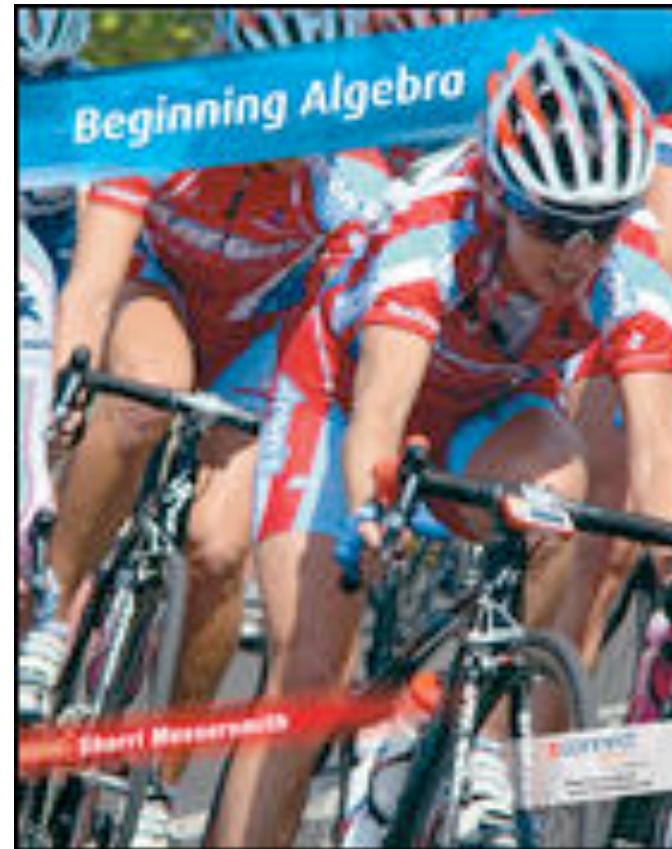
# Curriculum Management

- Textbook and Web support
- McGraw-Hill Connect Math

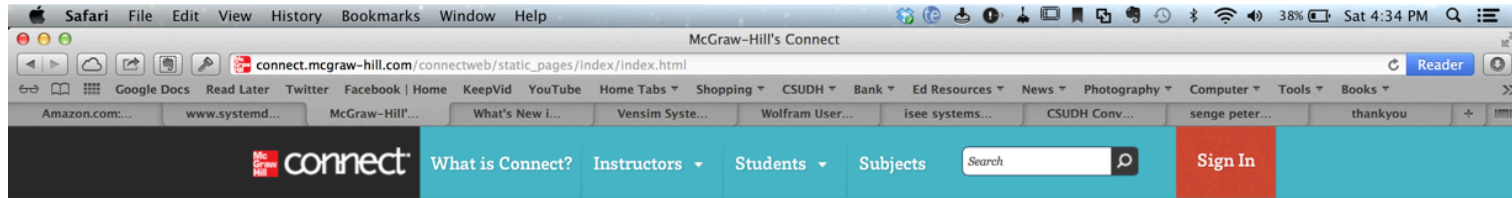
# Textbook

*Beginning and Intermediate  
Algebra*

Sherri Messersmith



# Web Support



Get Connected.  
Get **Results.**

McGraw-Hill Connect is a digital teaching and learning environment that saves students and instructors time while improving performance over a variety of critical outcomes.

[SEE FOR YOURSELF](#)

Student Pass Rate



connect Pass Rate 77.3%



Without CONNECT Pass Rate 64.6%



PROVEN EFFECTIVE

With Connect  Without Connect



TAILORED TO YOU

Connect's rich content, abundant assignment types, and flexible policy options can be customized,

# Curriculum Management

- Calendar
- Test schedule
- Scheduled Office Visits

# Test Management

- Test Construction
- Reliability and Validity
- Item Design
- Item analysis

# Test Construction

- Target test-median of 65% to 68%
- 30% “Easy” items ( $\geq 75\%$ )
- 50% “Medium” items ( $\geq 60\%$  and  $< 75\%$ )
- 20% “Hard” items ( $< 60\%$ )



# Test Construction

- Midterm
  - 25 items each
  - Cumulative - Midterm 2 (33%, 66%)
- Final
  - 35 items
  - 25%, 30%, 45%

# Student Success Policy

- 70% on final
- 70% overall average
- 65% to 70% judgement of instructor

# Item Design

1. Determine the value(s) of the variable for which the expression is **undefined**.

8.1/2

$$\frac{m+3}{m-4}$$

A. 4

B. -4

C. -3

D. 3

2. Determine the value(s) of the variable for which the expression is **zero**.

8.1/5

$$\frac{5x+12}{3x+7}$$

A.  $-\frac{7}{3}$

B.  $\frac{7}{3}$

C.  $-\frac{12}{5}$

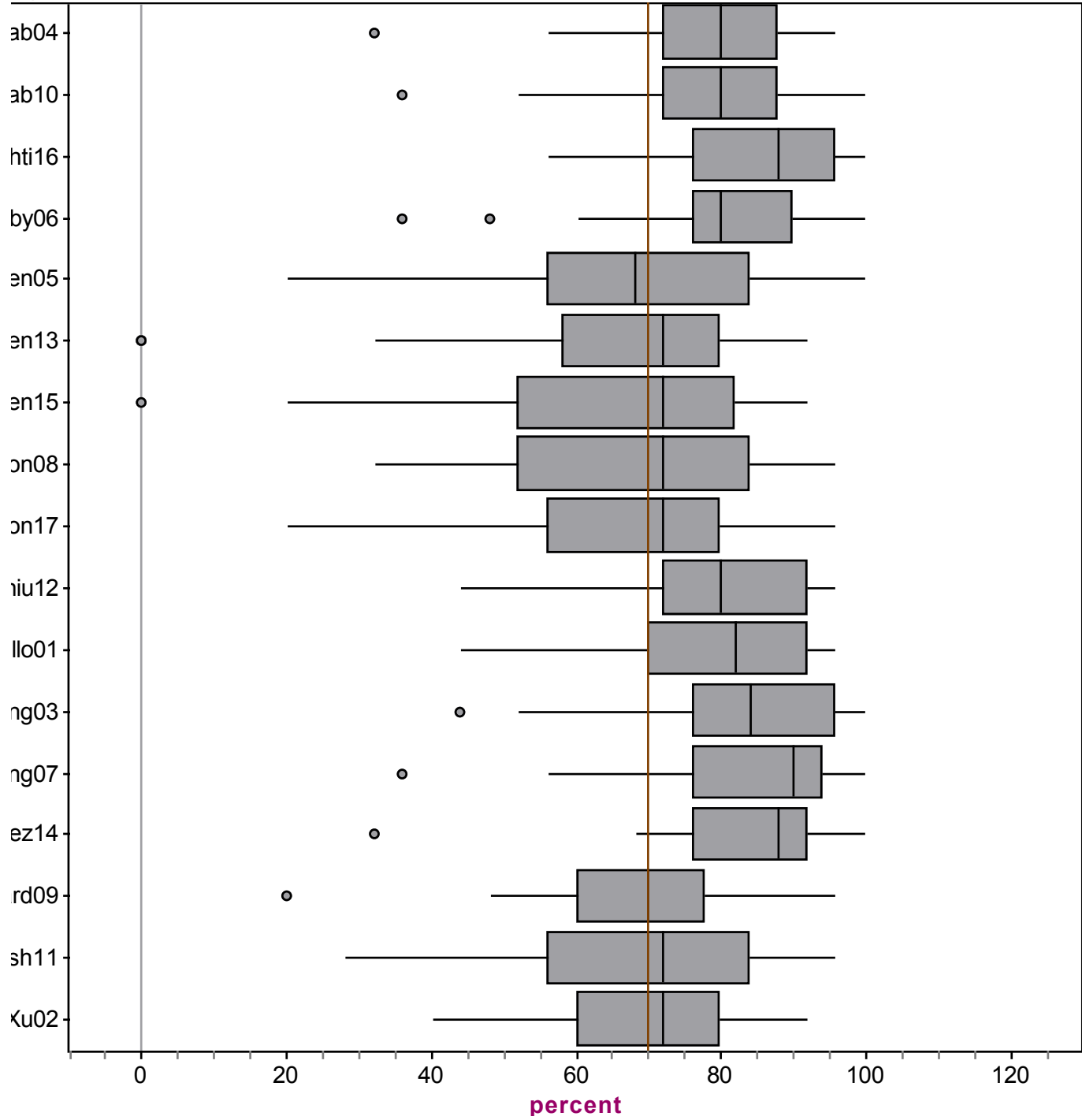
D.  $\frac{12}{5}$

# Faculty feedback

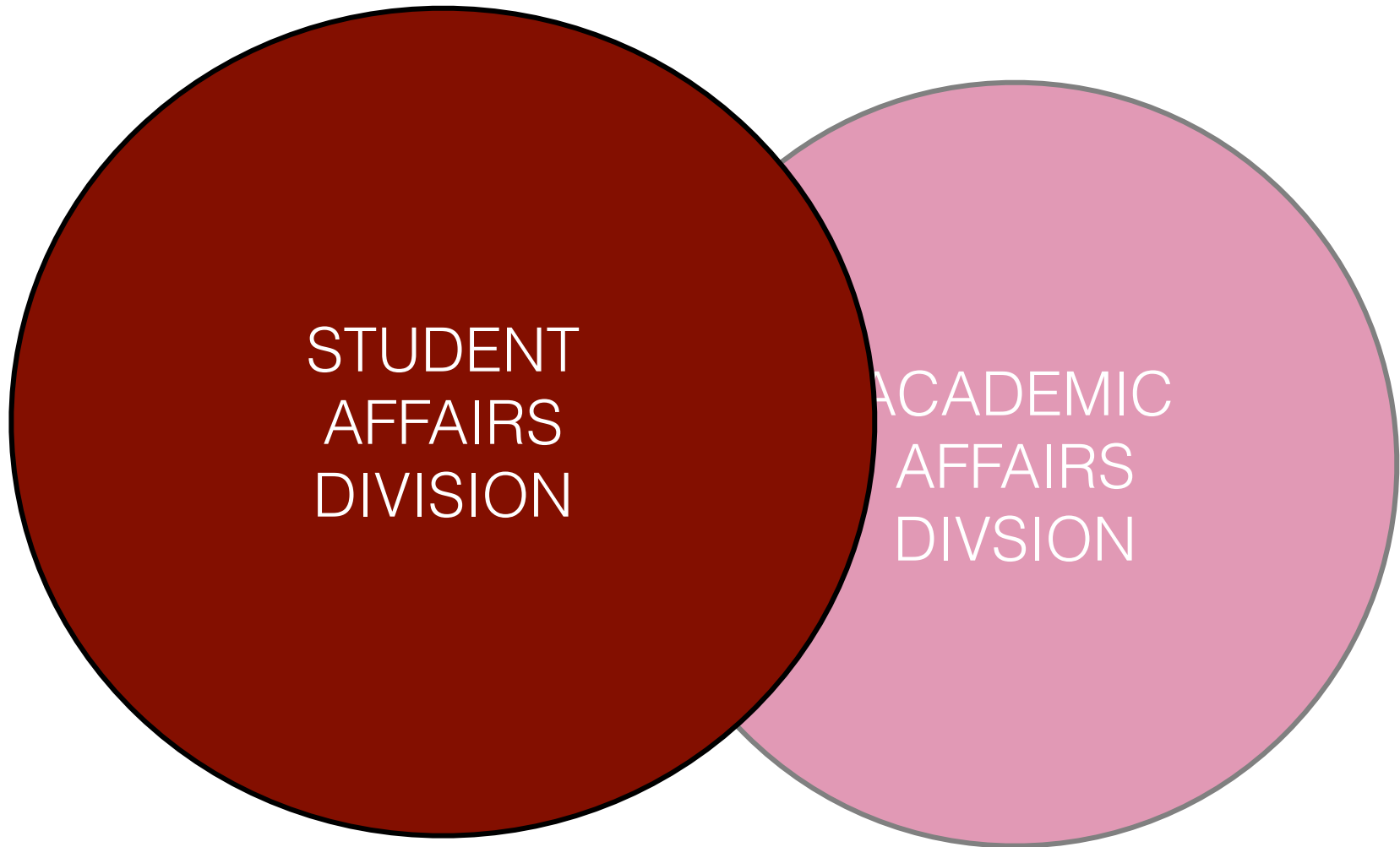
- Test item feedback
- Pedagogy

# Item Analysis

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
2	<b>Fall 2011 MAT 003 Midterm I Version 1 Tally</b>														
3	<b>Questio</b>	<b>Seccio</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>Key</b>	<b>N</b>	<b>%</b>	<b>LOD</b>	<b>PRED</b>	<b>Statu</b>			
4	1	2.1a/2	4	145	3	1	B	153	95%	Easy	Easy				
5	2	3.2/8	148	3	2	0	A	153	97%	Easy	Easy				
6	3	2.1b/6	30	96	9	16	B	151	64%	Medium	Medium				
7	4	3.1/4	1	28	123	1	C	153	80%	Easy	Easy				
8	5	2.3/6	5	115	28	4	B	152	76%	Easy	Medium	*			
9	6	3.2/15	22	15	23	87	D	147	59%	Hard	Hard				
10	7	3.1/7	4	11	122	16	C	153	80%	Easy	Medium	E			
11	8	2.2b/2	78	14	58	3	A	153	51%	Hard	Hard				
12	9	3.4/11	4	23	22	103	D	152	68%	Medium	Hard	M			
13	10	2.2b/7	11	13	128	1	C	153	84%	Easy	Medium	E			
14	11	2.2b/8	128	22	2	1	A	153	84%	Easy	Easy				
15	12	2.1a/4	11	0	1	140	D	152	92%	Easy	Hard	E	<b># of Easy</b>	17	
16	13	2.1a/10	140	2	2	9	A	153	92%	Easy	Medium	E	<b># of Medi</b>	3	
17	14	3.3/8	5	24	121	3	C	153	79%	Easy	Hard	M	<b># of Hard</b>	5	
18	15	3.6/2	23	109	11	8	B	151	72%	Medium	Medium				
19	16	2.3/2	8	14	6	124	D	152	82%	Easy	Easy				
20	17	2.2a/2	6	8	23	116	D	153	76%	Easy	Easy				
21	18	2.1b/1	3	6	141	3	C	153	92%	Easy	Medium	E			



line is at 70



# Student Support

- Summer Bridge (EOP)
- Cohort EOP Students
- Supplemental Instructors (SI)
- Workshop Sessions



# Summer Bridge

- EOP Students
- Summer Program
- Aggressive Invitation
- Lowest Performing Students on ELM

# Cohort EOP Students

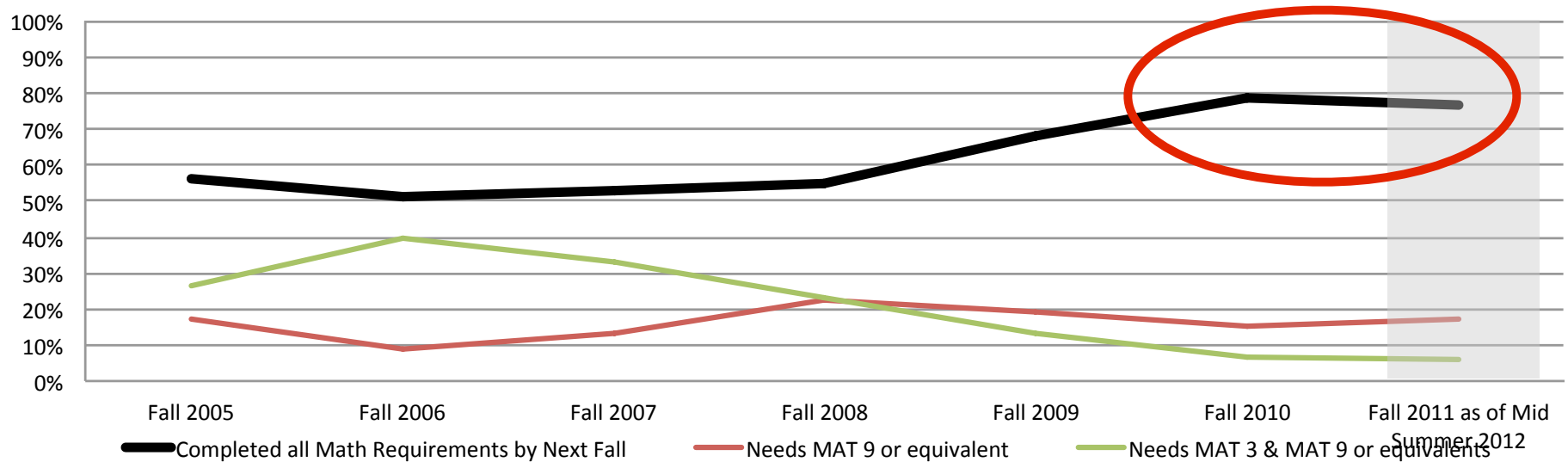
- Fall Schedule to Cohort Math Classes

# Supplemental Instructors

- SI TUTORS
- Undergraduate Students
- Attend Every class session
- Workshop Sessions

# Future Plans

## Fall First-Time Freshmen Math Remediation Fall 2005 to Fall 2011



Mat 03 = Beginning Alg

Mat 09 = Intermediate Alg

# Hybrid Model using ALEKS

- Individualized Homework
- Continual review of material
- Immediate Explanation
- Flexibility to work on anytime

# Expanded SI Model

- SI Tutors in all Developmental Math courses

# Fusion Courses

- Second Semester Developmental Math
- GE Course
- Statistics and Finite Mathematics
- Four units
- MWF Schedule
- SI Tutors



# Early Start Program

- All Developmental Math Students
- Mandatory Summer School
- Three-unit courses
- One-unit option

# Other Models

- Flipped Courses
- Inquiry-based Courses

# Questions?

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