

Strategic Redesign of Gateway Mathematics

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Dr. Roger Isaac Blanco, Director of Pedagogy, First in the World Math Grant

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Key Areas of Strategic Redesign

Scaling of non-algebra
pathway

- MAT0029/MGF1106
- MGF1107/MGF1106

Redesign of Intermediate
Algebra (MAT1033)

- Active classroom learning
- Embedded learning assistants
- Early Alerts and Intervention strategies

Additional redesign of
MAT1033 with
contextualized and co-
requisite curriculum

- Contextualized Curriculum
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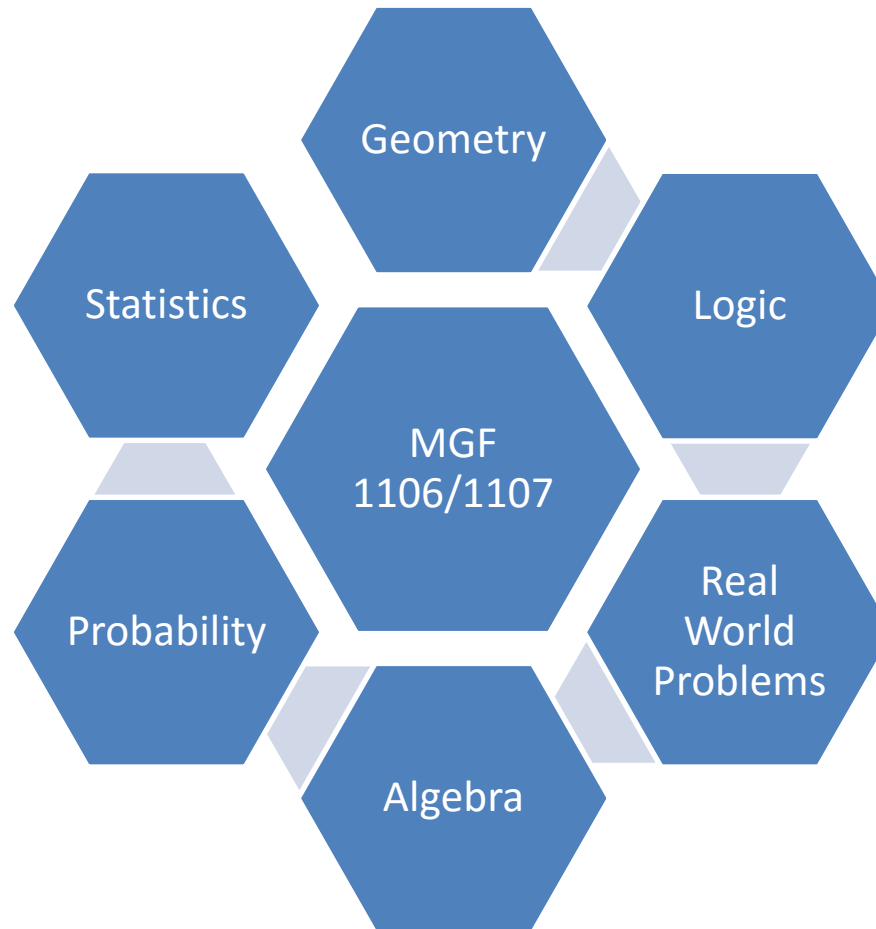
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Which students will the Non-Algebra Pathways serve?

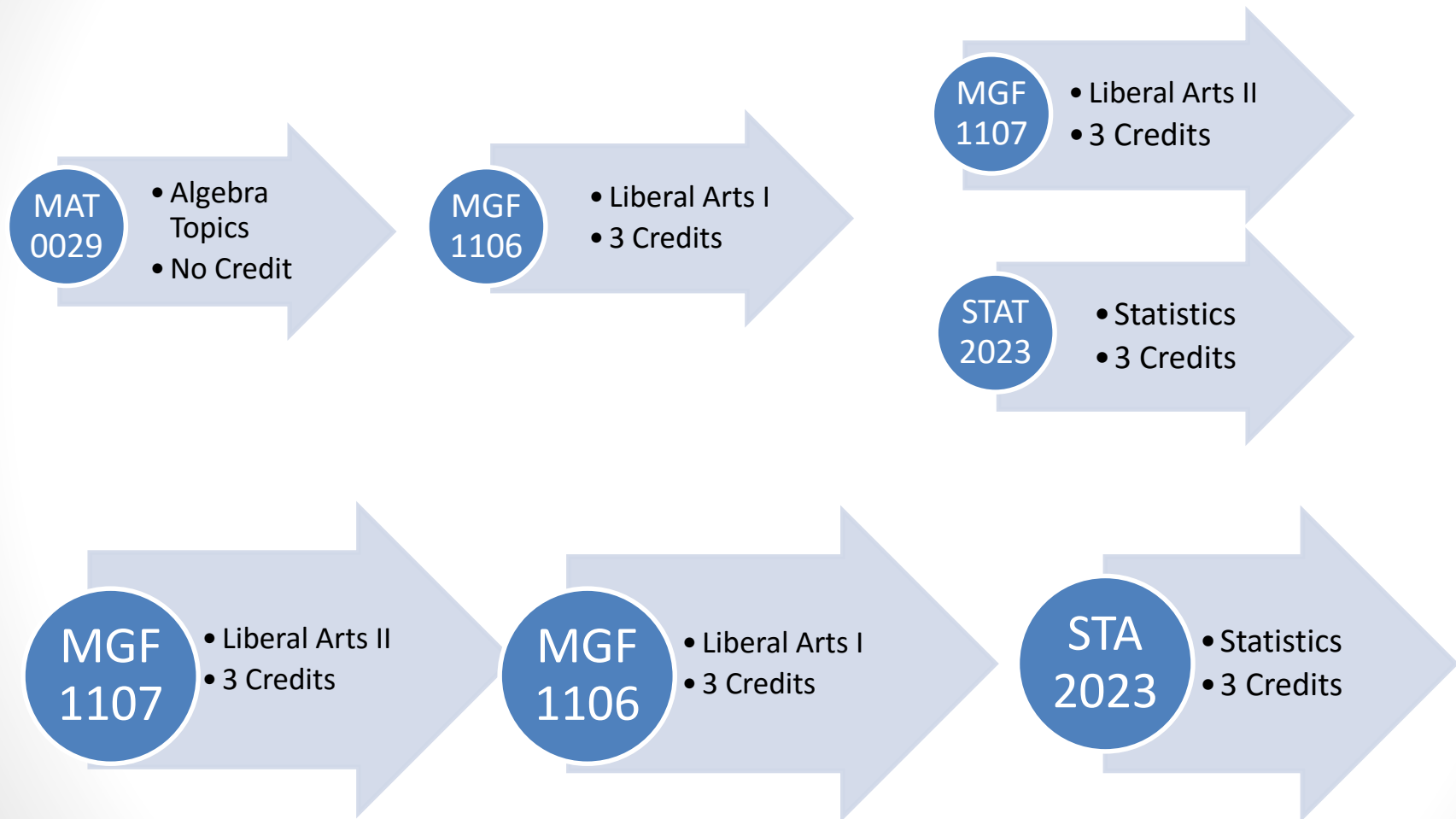
- Students with **programs of study that do not require College Algebra for degree, transfer / baccalaureate**

Non-Algebra = MGF

Mathematics, General & Finite

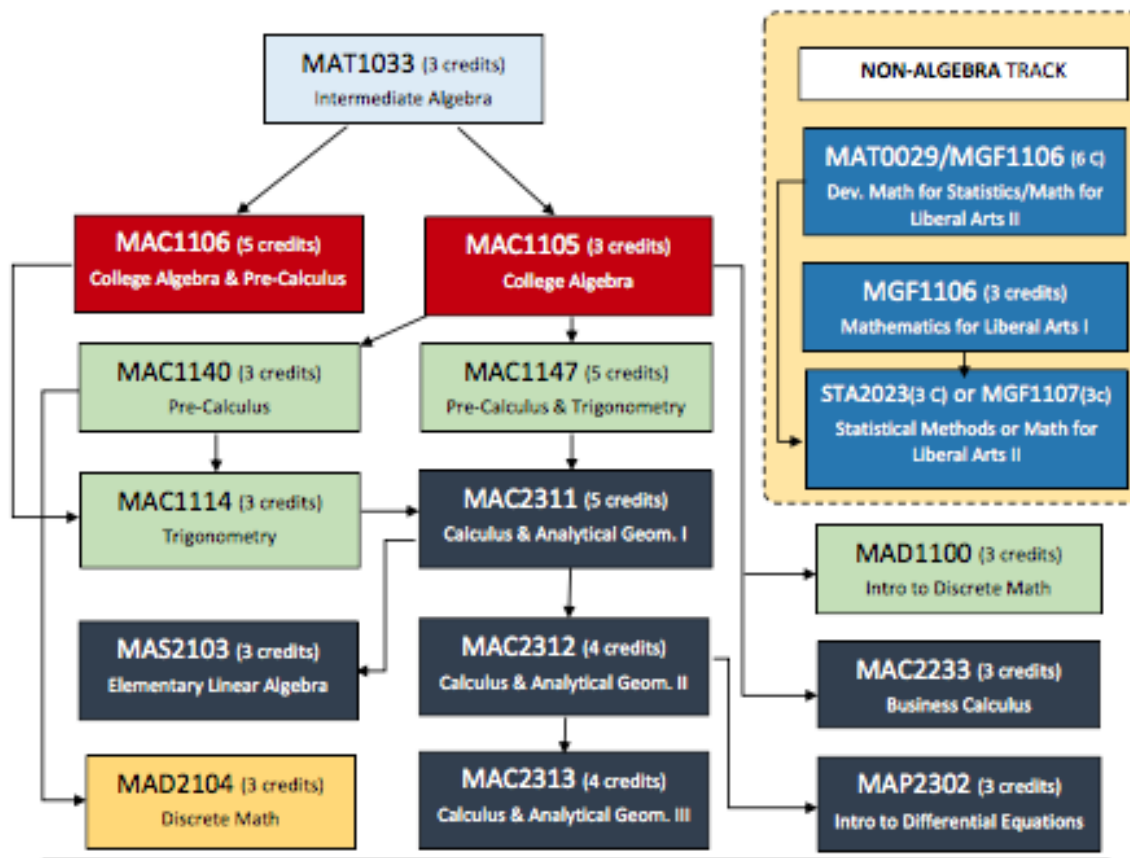


Sequences That Work





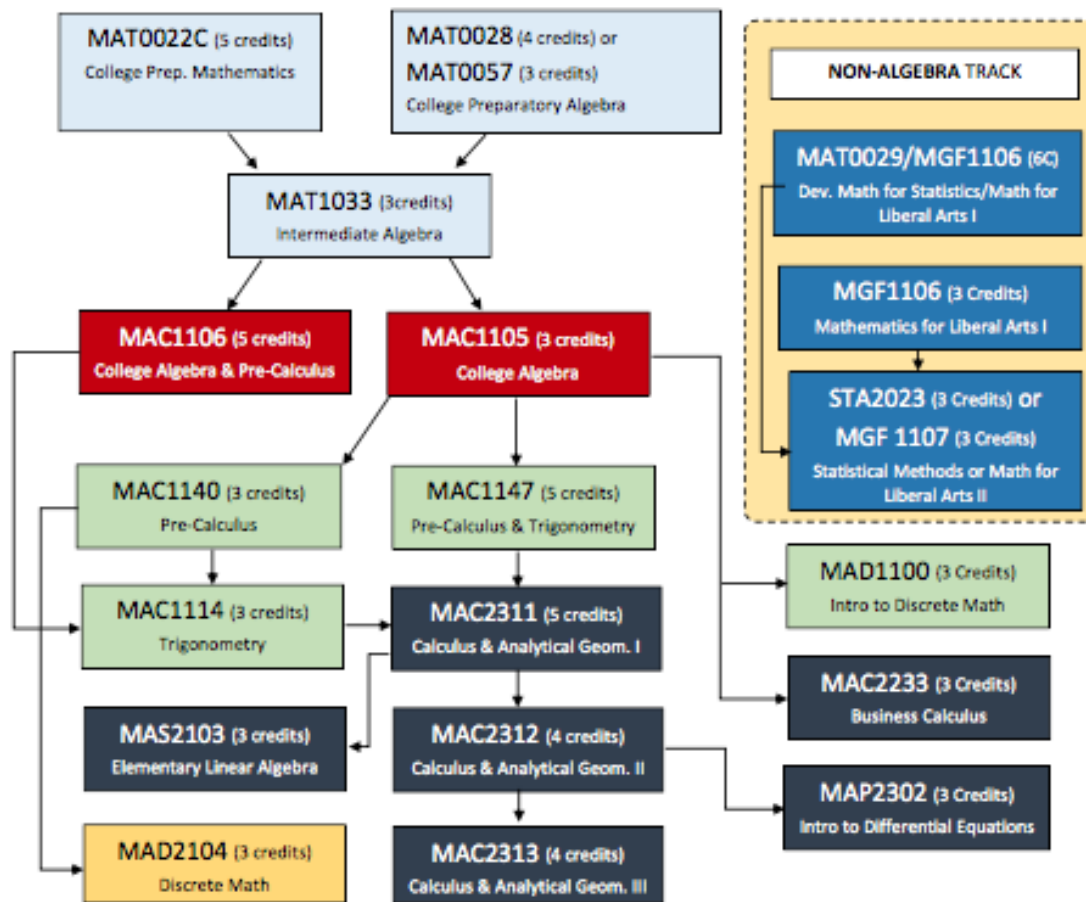
COURSE FLOW CHART (EXEMPT STUDENTS)
MATHEMATICS DEPARTMENT
Mathematics Course Sequencing



CLM Placement Scores		PERT Placement Scores	
Scores	Placement	Scores	Placement
40-62	MAC1105, MGF1106, MGF1107, STA2023	123-134	MAC1105, MAC1106, MGF1106, MGF1107 or STA2023
63-94	MAC1140, MAC1114 OR MAC1147 OR MAC2233	135-150	Take CLM
95-120	Up to MAC2311		



COURSE FLOW CHART (NON-EXEMPT STUDENTS)
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Mathematics Course Sequencing



CLM Placement Scores		PERT Placement Scores	
Scores	Placement	Scores	Placement
20-39	MAT1033	50-95	MAT0022C
40-62	MAC1105, MGF1106, MGF1107, STA2023	96-113	MAT0028, MAT0029 OR MAT0057
63-94	MAC1140, MAC1114 OR MAC1147 OR MAC2233	114-122	MAT1033
		123-134	MAC1105, MAC1106, MGF1106, MGF1107 OR STA2023
95-120	Up to MAC2311	135-150	Take CLM

Pass Rates in Gateway Mathematics

Course	Fall 13 Pass Rate	Fall 14 Pass Rate	Fall 15 Pass Rate	Fall 16 Pass Rate	Fall 17 Pass Rate
MAT0029 Developmental	90.8%	78.0%	83.1%	80.2%	82.0%
MGF1106 Required for Degree	70.4%	70.0%	72.0%	70.9%	70.0%

*Gateway math: MAT0029, MGF1106

Pass rate = (A+B+C)/(All Grades)

Source: MDC Institutional Research analysis using OBIEE data retrieved on 01/08/18

Statistics STA2023

- 3.0 Credits
- Following Semester
- Healthy Enrollment
- Mix of Algebra & Non-Algebra Majors

Pass Rates in Statistics (STA2023)

Course	Fall 13 Pass Rate	Fall 14 Pass Rate	Fall 15 Pass Rate	Fall 16 Pass Rate	Fall 17 Pass Rate
STA2023	72%	72%	73%	72%	73%

Pass rate = $(A+B+C)/(All\ Grades)$

Source: MDC Institutional Research analysis using OBIEE data retrieved on 01/08/18

Organization Search

Go

My Announcements

No Institution Announcements have been posted in the last 7 days.

CIOL Workshop and User Group Org

- › BBL2000-46– Blackboard Grade Center Workshop, Saturday, April 7, 2018, Wolfson Campus, 9:00 AM - 12:00 PM

My Organizations

Organizations where you are: Participant

CIOL Design Your Own Spring Break: Technology

CIOL Workshop and User Group Org

Announcements:

- › BBL2000-46– Blackboard Grade Center Workshop, Saturday, April 7, 2018, Wolfson Campus, 9:00 AM - 12:00 PM


Fulbright Scholars Programs

MAT0029/MGF1106 BBL ORG. (Math to Stats)

Mathematics Repository ORG.

Office of International Education

Organization Catalog

 Campus Communities

Institution Discussion Boards

No Discussion Boards have been selected for display.

Content Area



[MATH-TO-STATS Training Agenda 8-17-16](#)



[Training PPT: Math to Stat Pathway](#)



[MAT 0029 MGF 1106 Syllabus - Update 8-2016](#)



[MAT 0029 Material](#)



[MGF 1106 Material](#)

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MAT1033 Performance Data

Redesign Status and Session Code	Fall 2016			Fall 2017		
	Number of Sections	Sum of Headcount	(A+B+C)/ Headcount	Number of Sections	Sum of Headcount	(A+B+C)/ Headcount
Redesigned	80	2,578	63.5%	99	2,984	61.7%
1	80	2,578	63.5%	99	2,984	61.7%
Traditional	156	4,470	56.0%	205	5,214	55.2%
1	90	2,830	56.1%	122	3,666	52.6%
12W	13	366	47.8%	16	282	48.9%
14W	3	59	40.7%	4	125	53.6%
8W1	7	139	71.9%	7	139	66.2%
8W2	40	981	56.4%	49	852	66.0%
WKD	3	95	65.3%	7	150	60.0%
Grand Total (Redesigned + Traditional)	236	7,048	58.7%	304	8,198	57.5%

Source: MDC Institutional Research analysis using OBIEE data retrieved 01/30/18

Need for Gateway Course MAT1033 Redesign

Highest enrollment
math course with
highest failure rate

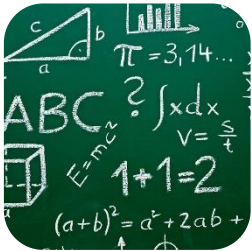
Pass rates dropped
significantly after
Florida's SB1720
passed in 2014

Approximately half
of MAT1033
students are
repeaters

Passing math is
essential for
retention, success
and completion

MAT1033 REDESIGN Strength

Professional Development of Course
Materials & Syllabus



Streamlined Curriculum



Students Engaged in Active Learning

MAT1033 REDESIGN

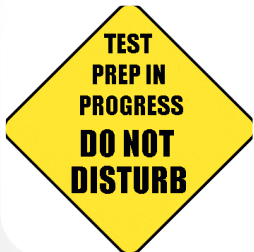


MAT1033 REDESIGN Support

Math Lab Component



One Assigned LEARNING ASSISTANT



Common Syllabus Allows for Common
TEST REVIEW (Mastery Sessions) in Lab

MASTERY Review in Math Lab

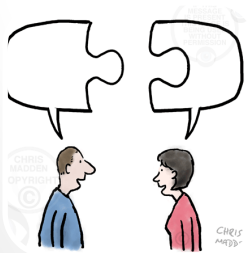


MAT1033 REDESIGN Key

Early Alerts & Interventions



Technology Assistance



Professor & Learning Assistant Collaborate to
Provide Individual Remediation

Pass Rates in Gateway Mathematics

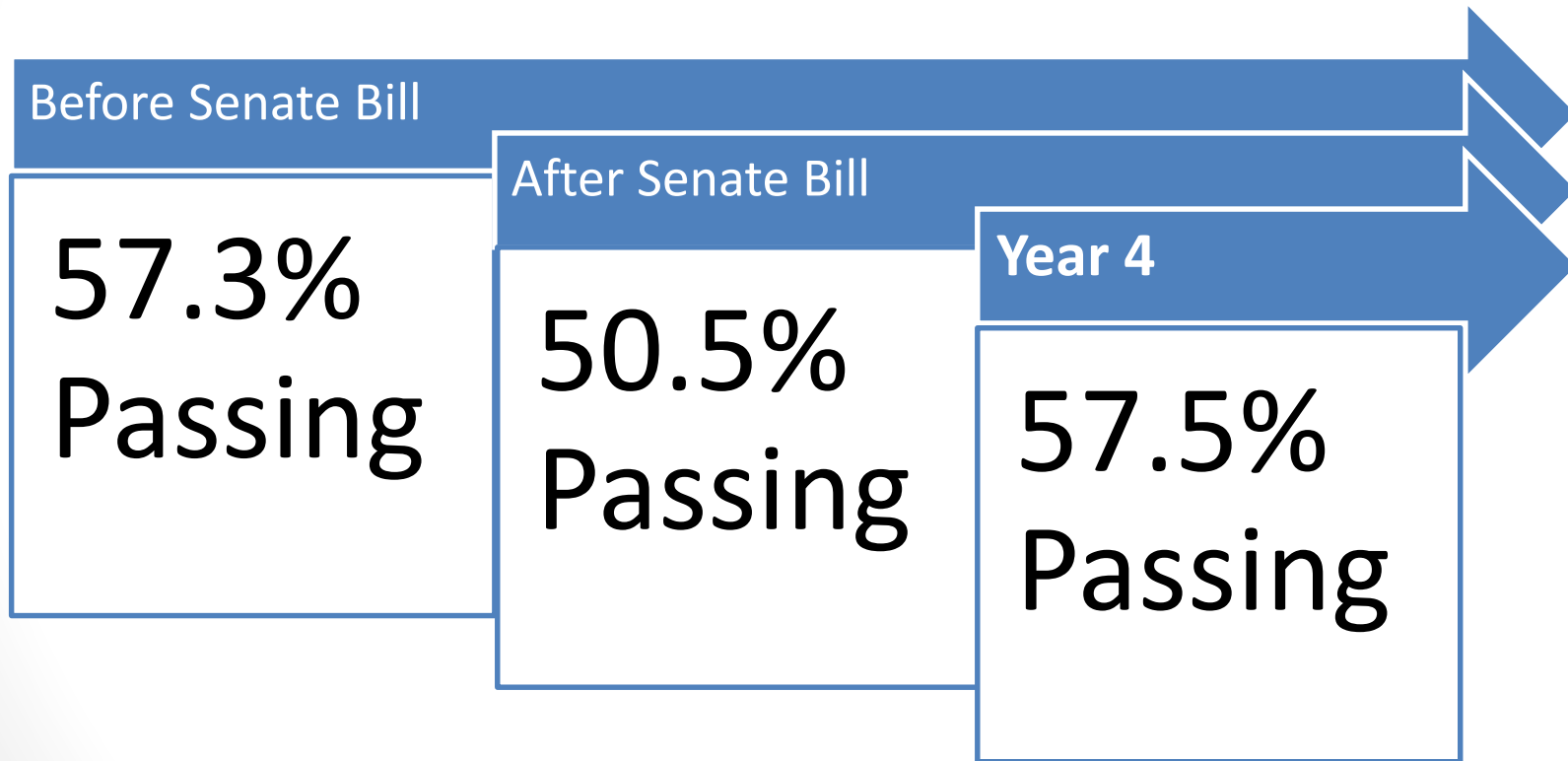
Course	Fall 13 Pass Rate	Fall 14 Pass Rate	Fall 15 Pass Rate	Fall 16 Pass Rate	Fall 17 Pass Rate
MAT0029	81.8%	78.0%	83.1%	81.2%	82.0%
MGF1106	70.4%	70.0%	72.0%	70.9%	70.0%
MAT1033 Total	57.3%	50.5%	52.8%	58.7%	57.5%
MAT1033 Non-Redesign			53.6%	56.0%	55.2%
MAT1033 Redesign			51.8%	63.5%	61.7%

*Gateway math: MAT0029, MGF1106, MAT1033

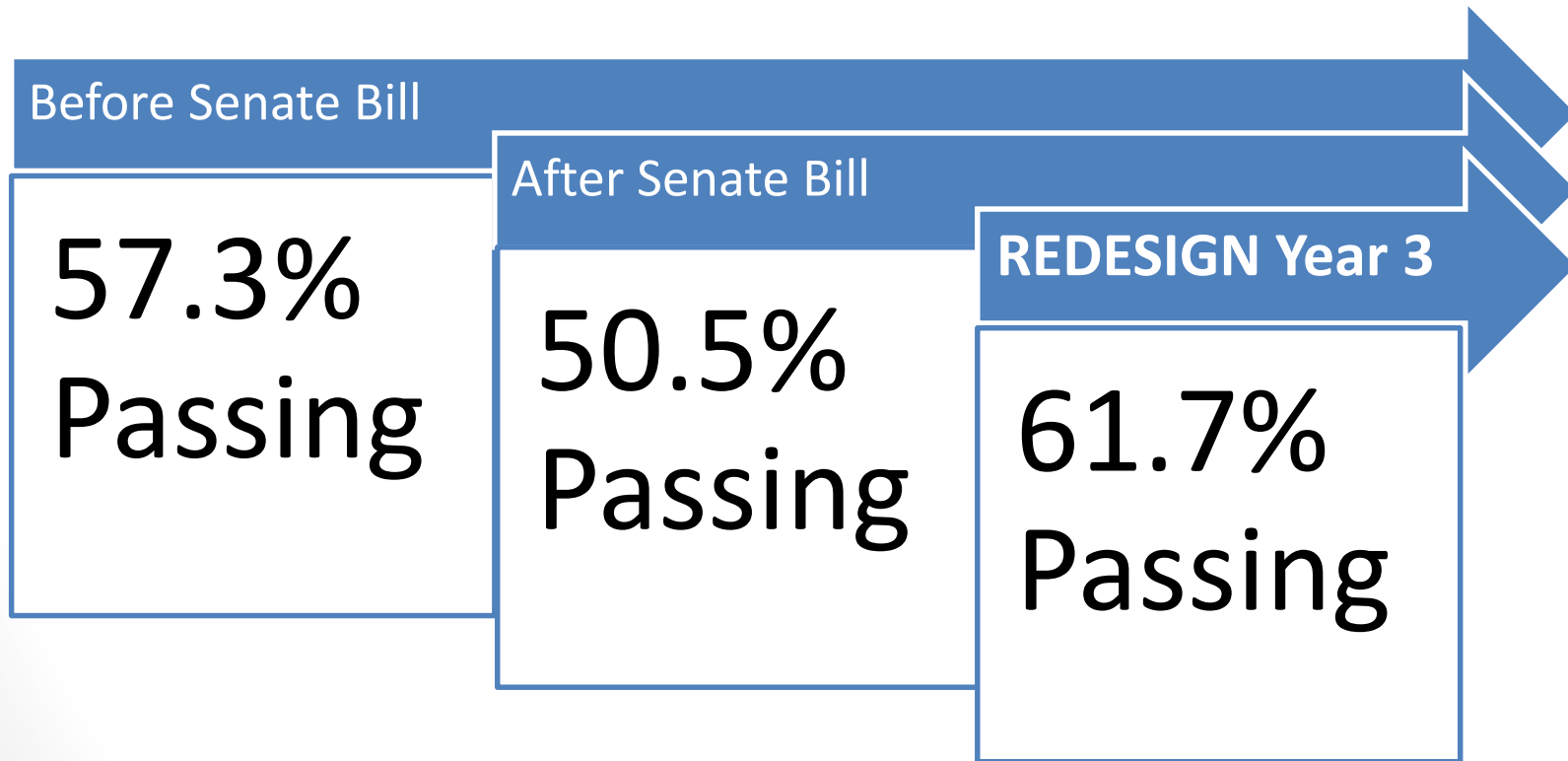
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Assessing Success of MAT1033 Overall



Assessing Success of MAT1033 REDESIGN



Impact of MAT1033 REDESIGN

7 Campuses

150+ Faculty
Trained

**Scaled
College-wide**

3,000 students/Fall
Semester

~ 1,000 more
students pass/year

Good Practices of MAT1033

Transfers to ...

Other math courses

Gateway Chemistry

General Accounting

Further, Possible Impact of MAT1033 REDESIGN

- Other high enrollment,
low pass rate **courses** may
be similarly redesigned

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Research Basis for CONTEXTUALIZATION

Facilitating Student Learning

Perin (2011)

Transfer of Deep Learning

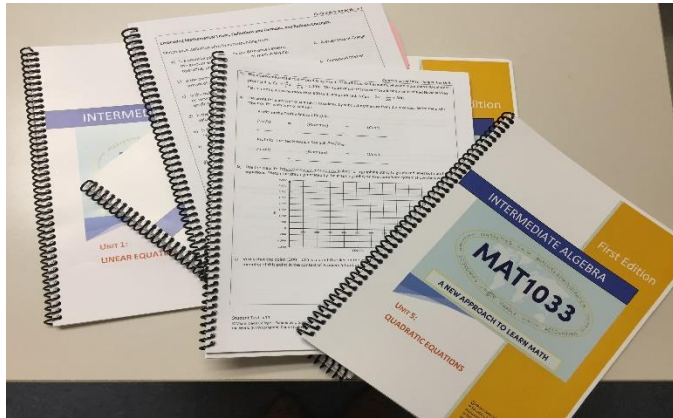
Chaplot, et al (2013)

Quantitative Reasoning

Boursema (2011)

Curriculum CONTEXTUALIZED

High Enrollment Majors



- Team Meetings
- Writing in Pairs
- Publish & Use

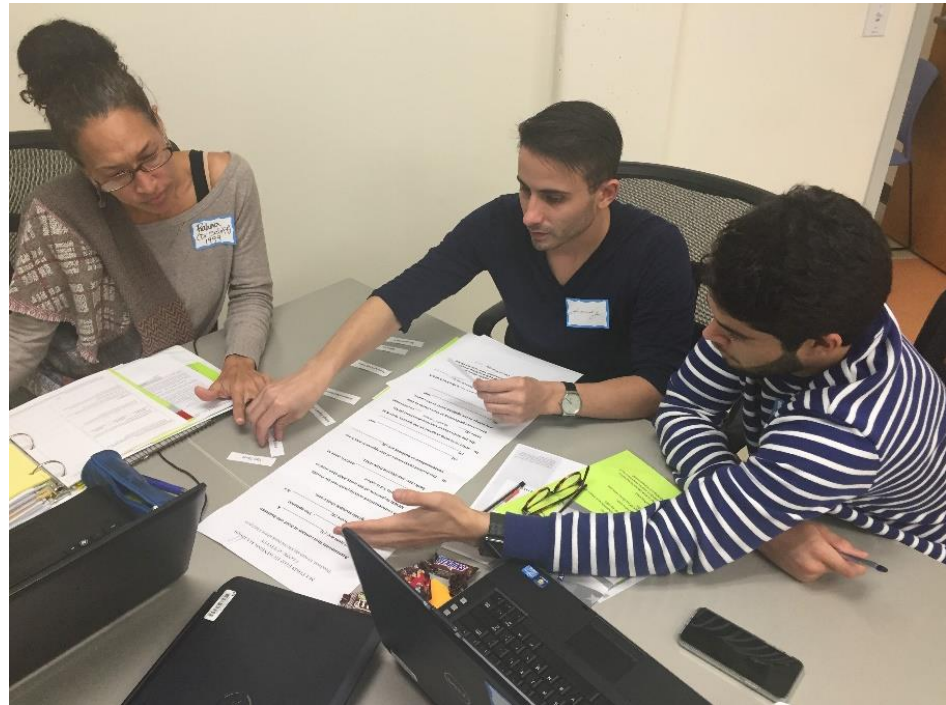
Cyclical Mastery— Consumable Course Materials:

- ✓ *Student Text*
- ✓ *Co-Requisites*
- ✓ *Performance Tasks*
- ✓ *College Algebra-Ready*



Professor + ILA

- **PLANNING Content & Delivery** (up to 1 hour/wk)
- **Division of Labor**
 - for Projection
 - Use of Formative Assessment (Excel files)
- **Quizzes or Plickers or Review Activities**



Professor + ILA

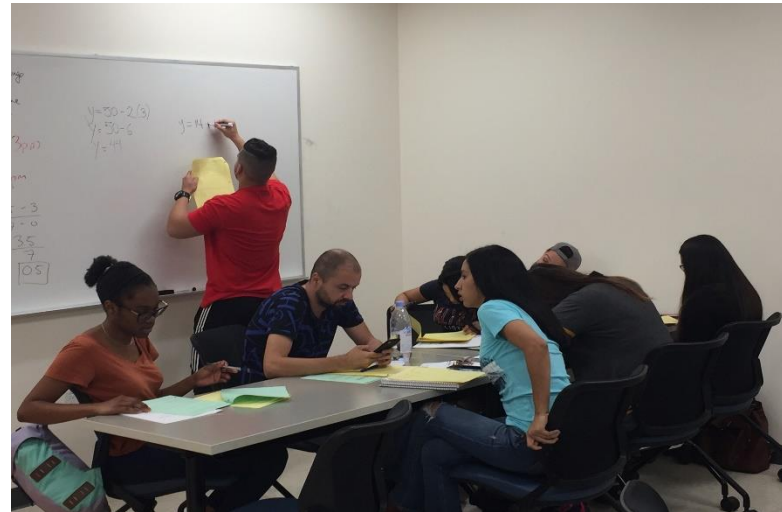


- Embedded in Classroom
- Roving During “Gradual Release”
- Noting Whose Attention Flags at Which Content
- Assisting Students Whom the Professor Identifies as High Demand

RECITATION HALL

Intermediate Algebra Lab

- WHAT IT LOOKS LIKE
 - Field Questions Based on What Was Just Taught by Professor
 - Collaboration on Co-requisite Material
 - Student Defends Process & Solution(s)
 - Out of Their Seats at Boards



- Fun, but Forced Practice
- Retrieval


RECITATION HALL

Intermediate Algebra Lab



- GOALS: True Competency for College Algebra-Ready & Beyond
- Academic Belonging
- Informal Cohort
- Public Confidence
- Entity Mindset

Student Success



Advisor:
EARLY
ALERT

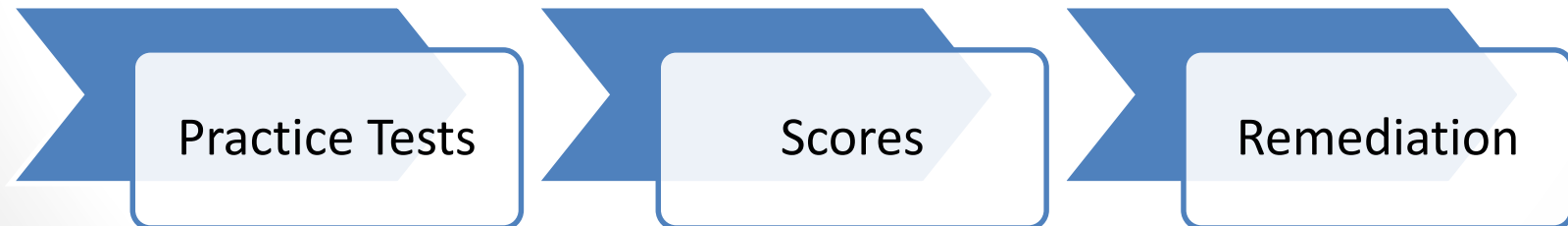
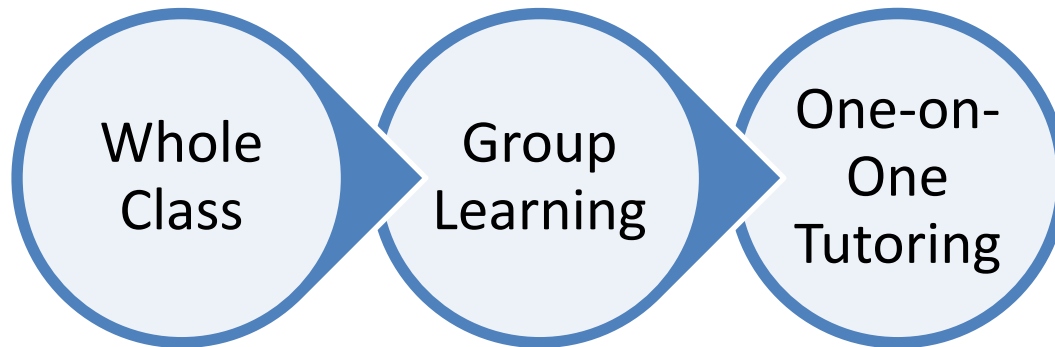


ILA:
INTERVENTION



Professor
& Grant
Staff

Multiple Approaches & Multiple Methods for Feedback



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MAT1033 Redesign			51.8%	61.5%	61.7%
MAT1033 Contextualized					73.9%

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Pass rate = (A+B+C)/(All Grades)

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Preliminary results of MAT1033 CONTEXTUALIZED are promising . . .

- In the Fall of 2017, our study looked at a total of 337 Business Majors.
- Students were enrolled by randomized selection into one of 12 sections, 6 Control and 6 Intervention at the Kendall Campus of Miami Dade College.
- Instructors, a mixture of full and part-time faculty, were also randomly assigned.
- Overall, students in the Intervention Classes who received the contextualized curriculum, the embedded ILA, and the Recitation Hall had a significantly higher pass rate.

Fall 2017 (2177) MAT1033 Performance

	A	B	C	D	F	I	W	Pass Rate	Success Rate	Retention Rate
Intervention Group	38	50	34	10	26	0	7	73.9%	77.2%	95.8%
Control Group	33	36	35	19	24	0	10	66.2%	70.7%	93.6%
Kendall Campus	550	527	538	228	642	1	200	60.1%	65.0%	92.6%
College-wide	1,560	1,520	1,612	715	1,682	10	533	57.5%	67.0%	88.0%

Pass Rate: $(A+B+C)/(\text{All Grades})$

Success Rate: $(A+B+C+S)/(\text{All Grades} - \text{Withdrawals})$

Retention Rate: $(A+B+C+D+F+S+P+U+I)/(\text{All Grades})$

I: Incomplete

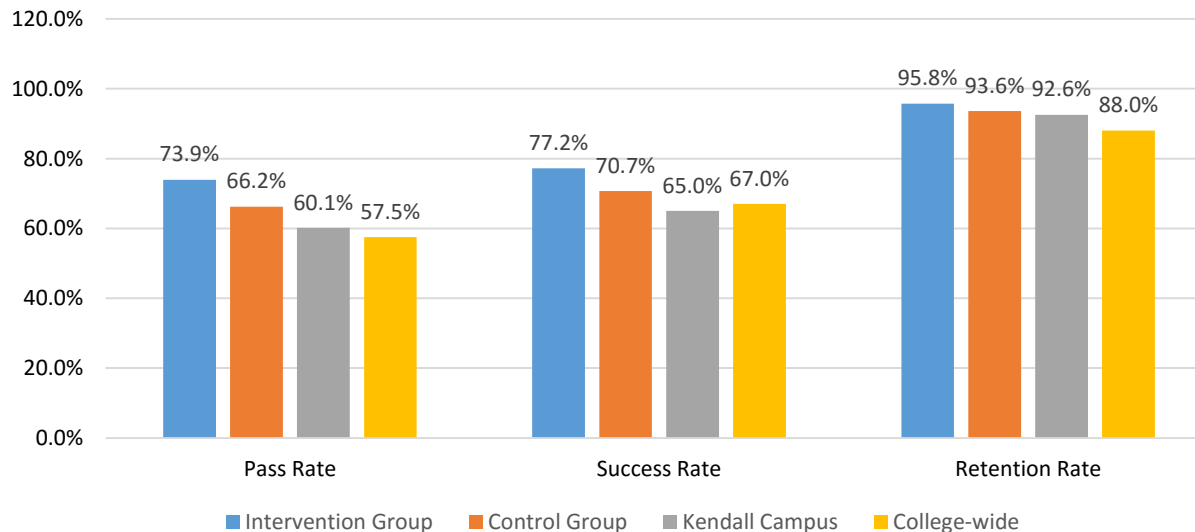
W: Withdraw

P: Progress

S: Success

U: Unsatisfactory

2177_MAT1033 Performance Comparison



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Questions?

To continue the conversation . . .

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