



The Challenges – and Successes – of Remediation in Calculus  
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# Where We Began – Summer 2013

## Campus Strategic Plan

- Redesign high-volume courses through integration of new technology and modified teaching methods to enhance student learning
- One of three funded strategic plan initiatives on campus

# Historic Success Rates

From Winter 2004 to Spring 2018:

Calculus I: 69.76% pass rate

Calculus II: 76.35% pass rate

Calculus III: 75.36% pass rate

# What Do Successful Calc I Students Do?

Grade in Calc I	Calc II Pass Rate on First Attempt
A	97.67%
B	90.31%
C	65.13%

# What Do Unsuccessful Calc I Students Do?

First Attempt	Calc I Pass Rate on Second Attempt
D	72.06%
F	36.42%
WD	38.98%
HR	44.17%

Second Attempt	A	B	C	D	F	WD	HR
First Attempt: D	2.70%	27.36%	42.00%	17.53%	8.09%	1.93%	0.39%
First Attempt: F	0.62%	10.91%	24.90%	22.22%	32.92%	8.23%	0.20%
First Attempt: WD	1.27%	8.90%	28.81%	14.83%	30.09%	13.98%	2.12%
First Attempt: HR	1.23%	8.59%	34.36%	18.40%	24.54%	9.20%	3.68%

# Can Underperforming Calc I Students Be Identified Early?

Fall 2013	A, B, C after E2	D after E2	F after E2	Total
Total Students	364	49	55	468
Passed (A, B, C)	299	4	0	303
Failed (D, F)	63	33	31	127
Withdrew	2	12	24	38

Fall 2014	A, B, C after E2	D after E2	F after E2	Total
Total Students	342	35	51	428
Passed (A, B, C)	292	3	2	297
Failed (D, F)	48	32	36	116
Withdrew	2	0	13	15

# A New Program for Underperforming Students

We are providing an option for underperforming students which

- Allows them to maintain full-time status
- Does not result in a GPA penalty
- Provides them with a structured opportunity to work on deficiencies with prerequisite material within the context of calculus
- Addresses student success skills

# Success for Calculus

- 4 credit hour course (3 lecture, 1 lab)
  - Same as Calculus I
- Course Description:

This course focuses on the use of college algebra and trigonometry skills within the context of calculus, providing students with the opportunity to improve their preparedness for future calculus coursework.



# Success for Calculus

- Only offered pass/fail
- Begins at the end of Week 8 (after Exam 2)
- Meets at the same times as Calculus I lectures
- Blended course
  - Some content delivered online
  - In-class time is focused on solving problems
  - Non-mathematical content is included

# Success for Calculus

- Calculus I students with a grade below 70% after Exam 2 who have participated in Calc I are strongly encouraged to take Success.
- Replaces Calculus I on schedule and transcript.
- Students are only allowed to take Success for Calculus one time, regardless of outcome.
- Successful completion is not prerequisite to retaking Calculus I
  - These students already meet the prerequisite!

# Transitioning to Success for Calculus

- Invitations sent via email
  - Opt Out for students at or below 65%
  - Opt In for students between 65%-70%
- Students sign a contract allowing us to make the switch
- Spreadsheet with list of changes sent to Registrar's Office
  - Changes are backdated to completely remove current Calculus I attempt from transcript

## Format of Class

- 3 class meetings per week for 7 weeks
- Students are required to complete worksheets prior to attending most class sessions
- Most class time is spent working problems in small groups with the instructor available to assist. This is not a lecture!
- Other class time is spent on various student success activities.

# Calculus I after Success for Calculus

Grade in Calc I	A	B	C	D	F	Pass Rate ( $\geq$ C)
Satisfactory in Success	4.59%	25.51%	39.29%	19.90%	10.71%	69.39%
Unsatisfactory in Success	0.00%	12.70%	26.98%	14.29%	46.03%	39.69%

Historic Pass Rates in Calculus I:

Overall – 69.76%

On first attempt – 73.47%

On second attempt – 53.89%

On third and subsequent attempts – 45.19%

# Student Performance Beyond Calculus I

Courses to examine:

Calculus II

Calculus III

Physics I

Physics II

Statics

Circuits

At this time, sample sizes remain small.

# Calculus II after Success for Calculus

Grade in Calc II	A	B	C	D	F	Pass Rate ( $\geq$ C)
Satisfactory in Success	7.38%	11.48%	37.70%	26.23%	17.21%	56.56%
Unsatisfactory in Success	0.00%	12.90%	12.90%	38.71%	35.48%	25.81%

Historic Pass Rates in Calculus II:

Overall – 76.35%

On first attempt – 79.47%

On second attempt – 61.11%

On third and subsequent attempts – 49.28%

# Physics, Statics, and Circuits

Course	Physics I	Physics II	Statics	Circuits
Pass rate for all students Sp14 – Sp18	84.58%	90.14%	84.16%	80.75%
Pass rate after satisfactory in Success for Calc	77.27%	87.95%	81.97% (n=61)	66.67% (n=12)



# Non-Mathematical Activities

- Goal Setting
- Time Management
- Diet and Exercise
- Test Anxiety

# Diet and Exercise Activity

## Student Feedback:

“I'm trying to work on basically EVERYTHING. I need to exercise more, eat better, and get out more. I have been working on it already, but I am still lacking. The progress I have made however has managed to help rid myself of my near constant stomach pains.”

# Questions?

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