

ARCOS

The Bridge to Make a STEM Community

Miami Dade College, Wolfson Campus
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Director of Program Development





A

Accelerate



Funded by the U.S. Department of Education, Developing Hispanic-Serving Institutions Program - Title V

R

Retain



ARCOS's aim is to increase retention, completion, and successful transfer and transition to four-year STEM related programs

C

Complete



Name derived from "arches"—a curved structure typically seen in architecture—capable of supporting significant weight

O

Opportunities



ARCOS is committed to offering a strong academic and student support structure from beginning to degree completion and transfer.

S

Support



Five-year grant that runs from October 1, 2015 to September 30, 2020

SMAART Programs

Academic Advising

F⁴

Wolfpack

STEM

Community

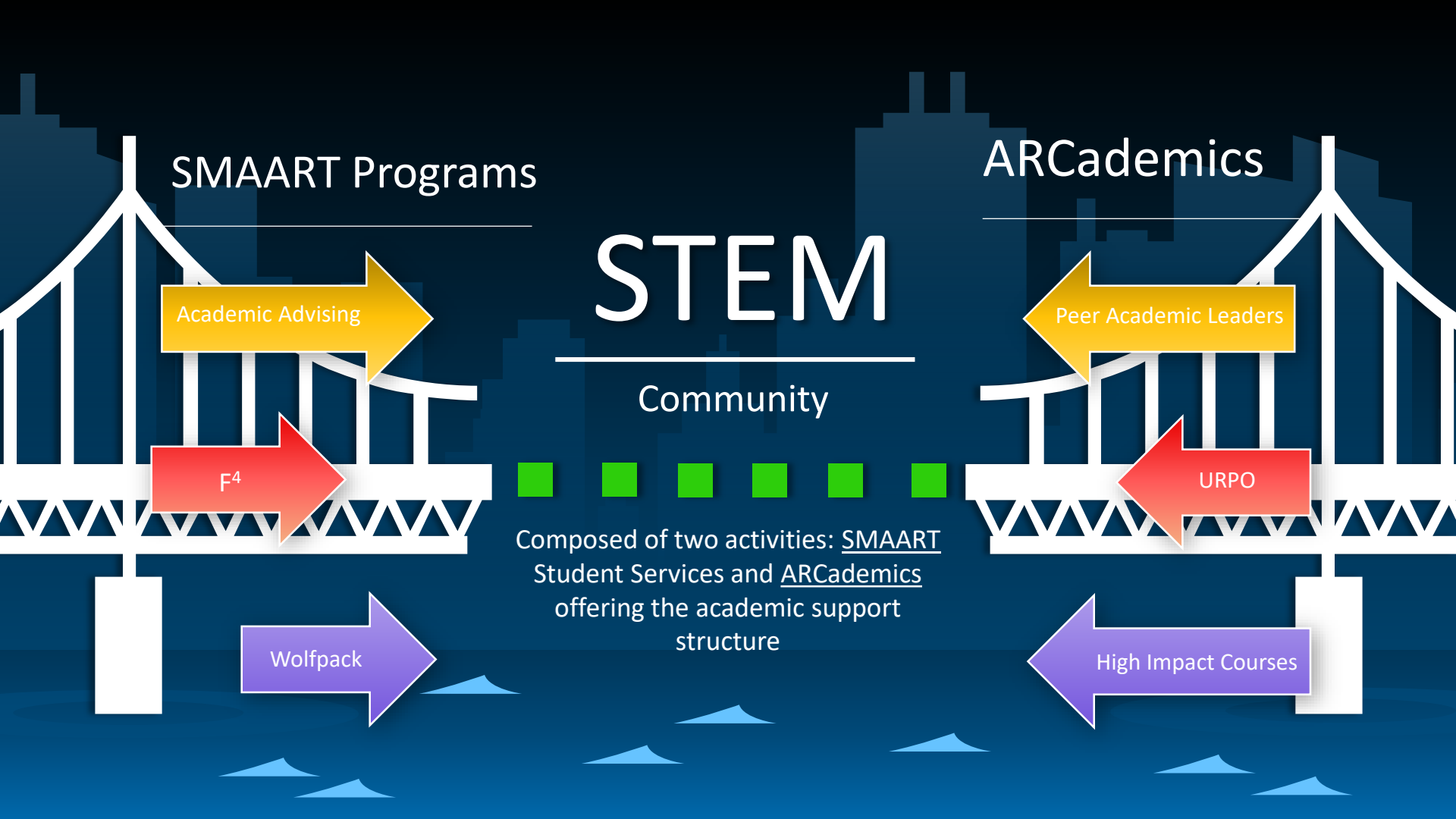
Composed of two activities: SMAART
Student Services and ARCademics
offering the academic support
structure

ARCademics

Peer Academic Leaders

URPO

High Impact Courses





Grant Objectives



Objective 1

70% of student participants persist and/or graduate in STEM from one academic year to the next



Objective 2

35% of student participants graduate and or transfer from an Associate's to a Bachelor's program within three years



Objective 3

60% of students successfully complete or place out of College Algebra during their first academic year of college



Objective 4

80% of graduates transfer with at least 50% of required STEM pre-requisite courses



Objective 5

Increase pass rates by 5% in new designed courses supported by the grant



Objective 6

80% of students successfully engaged in grant supported research/projects complete their assignments



Specific Outputs



F4

50 students complete the F⁴ program per year



Wolf Pack

7 faculty, 15 peer mentors, and 30 mentees participate in the program.



Team-based Learning
60 students participate in cooperative team-based learning opportunities



Advising

120 students receive two academic advising sessions per year



Tutoring

75 students receive individual tutoring per year



Courses

Six hybrid/web-enhance or other high-impact courses are developed by year 5 of the grant

ARCOS Services and Components



Prepare STEM students to college life through a series of workshops and math preparation.

Fast & Furious with Friends & Family (F⁴)



Assistance with goal setting, academic resources, and course/career planning.

Academic Advising



Support second year students through mentoring, while they in turn guide first year students.

Wolf Pack Mentoring

ARCOS Services and Components



Facilitate STEMinars, STEM Coffee Hours, field trips, and mindset interventions.

Events & Workshops



Place to study, tutoring in math and science, and tips on effective study skills.

STEM Student
Success Center



Small group course review sessions that meet weekly under the guidance of faculty.

Peer-led Learning

F4

FAST AND FURIOUS WITH FRIENDS AND FAMILY

PROGRAM SCHEDULE

SUMMER 2019 F4 KICK-OFF

Friday, June 14 9:00 am - 2:00 pm, Room 6100

MONDAY
JUN 17

TUESDAY
JUN 18

WEDNESDAY
JUN 19

THURSDAY
JUN 20

FRIDAY
JUN 21

8:00am -9:15am
MATH
IS EVERYWHERE
WORKSHOP
Room 2206

9:30am -11:00am
MATH ACADEMY
Room 2205

BREAK

11:15am - 1:00pm
PLTL SESSION

8:00am -11:00am
MATH ACADEMY
Room 2205

BREAK

11:15am - 1:00pm
PLTL SESSION

8:00am -10:00am
COLLEGE
SURVIVAL 101
Room 2215

10:15am -11:45am
MATH ACADEMY
Room 2205

BREAK

12:00pm - 1:00pm
PLTL SESSION

8:00am -11:00am
MATH ACADEMY
Room 2205

BREAK

11:15am - 1:00pm
PLTL SESSION

8:00am -9:00am
FINANCIAL AID
WORKSHOP
Room 7128

9:15am -10:30am
MATH ACADEMY
Room 2206

BREAK

10:45am -12:00pm
PLTL SESSION

12:00am -12:45pm
BREAK

12:45pm
PERT EXAM
Room 3104

JUNE 24TH THRU AUGUST 2ND

8:00am - 11:20am
MAT 1033

10:30am - 12:00pm
PLTL SESSION
In-class

8:00am -10:15am
SLS 1106

8:00am - 11:20am
MAT 1033

10:30pm - 12:00pm
PLTL SESSION
In-class



Note: Student placed in Intermediate Algebra (MAT1033) must register for MAT1033 (Ref#2651), unless otherwise advised by ARCOS staff.

F4

FAST AND FURIOUS WITH FRIENDS AND FAMILY

PROGRAM SCHEDULE

MONDAY
JUN 12

TUESDAY
JUN 13

WEDNESDAY
JUN 14

THURSDAY
JUN 15

FRIDAY
JUN 16

8:00am -9:15am
MINDSET
WORKSHOP
Room 2214

9:30am -11:00am
MATH ACADEMY
Room 2204

BREAK

11:15am - 1:00pm
PLTL SESSION

8:00am -11:00am
MATH ACADEMY
Room 2204

BREAK

11:15am - 1:00pm
PLTL SESSION

8:00am -10:00am
MATH STUDY
SKILLS
Room 2204

10:15am -11:45am
MATH ACADEMY
Room 2204

BREAK

12:00pm - 1:00pm
PLTL SESSION

8:00am -11:00am
MATH ACADEMY
Room 2204

BREAK

11:15am - 1:00pm
PLTL SESSION

8:00am -9:30am
FINANCIAL AID
WORKSHOP
Room 3208

9:45am -11:00am
MATH ACADEMY
Room 2204

BREAK

11:15am - 12:30pm
PLTL SESSION

BREAK

1:30pm
PERT EXAM
Room 3104

JUNE 19TH THRU JULY 28TH

8:00am - 11:20am
MAT 1033

11:45am - 1:15pm
PLTL SESSION

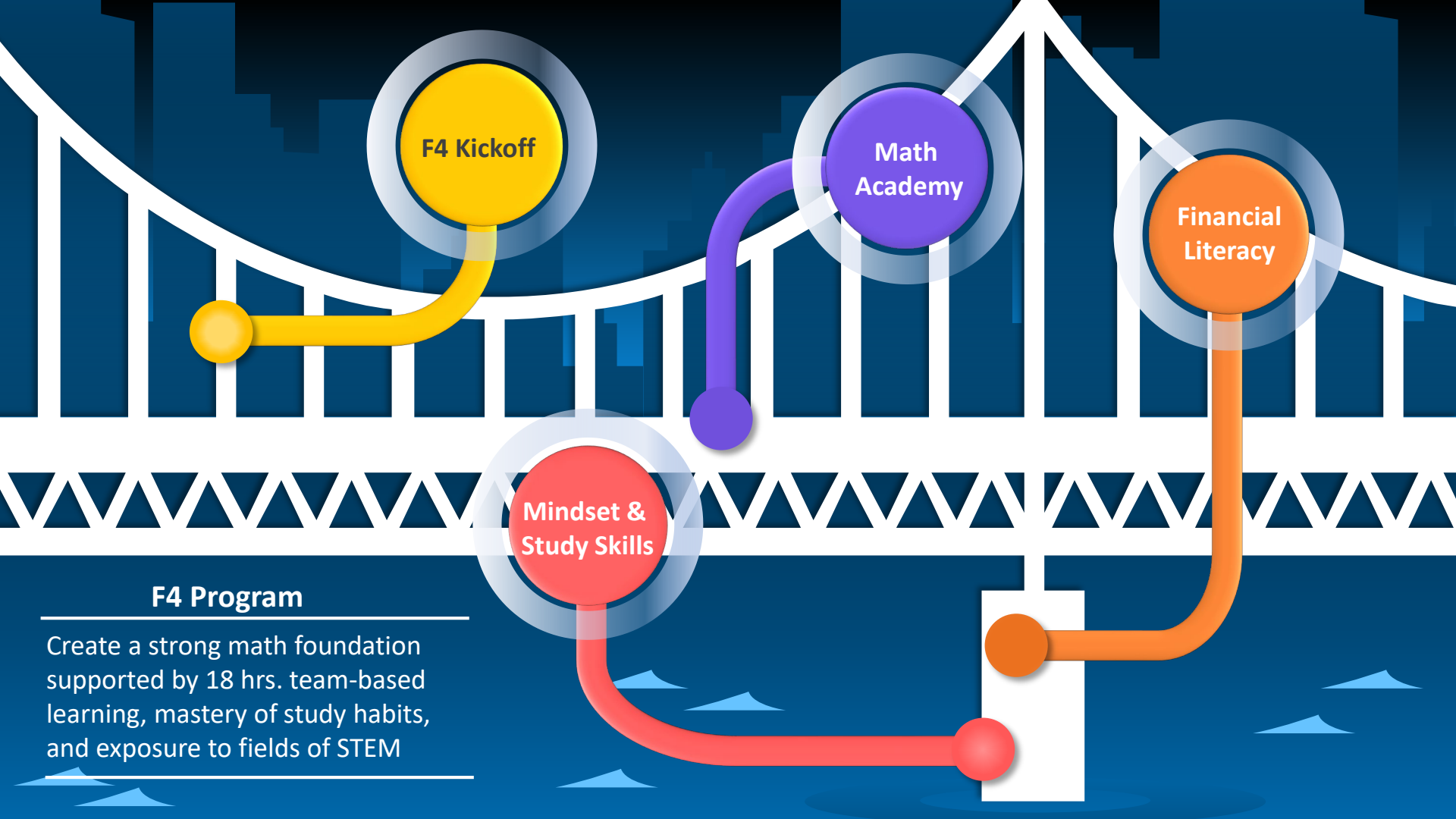
8:00am -10:15am
SLS 1106

8:00am - 11:20am
MAT 1033

11:45am - 1:15pm
PLTL SESSION



Note: Student must register for Intermediate Algebra MAT1033 (Ref#4423) and SLS1106 (Ref#5753), unless otherwise advised by arcoss staff. Rooms for PLTL session will be assigned individually.



F4 Kickoff

Math
Academy

Financial
Literacy

Mindset &
Study Skills

F4 Program

Create a strong math foundation supported by 18 hrs. team-based learning, mastery of study habits, and exposure to fields of STEM

67 % retained
in STEM

81.4% completed MAC1105
during 1st year



62% retained
in STEM

67.7% completed MAC1105
during 1st year



81% retained
in STEM

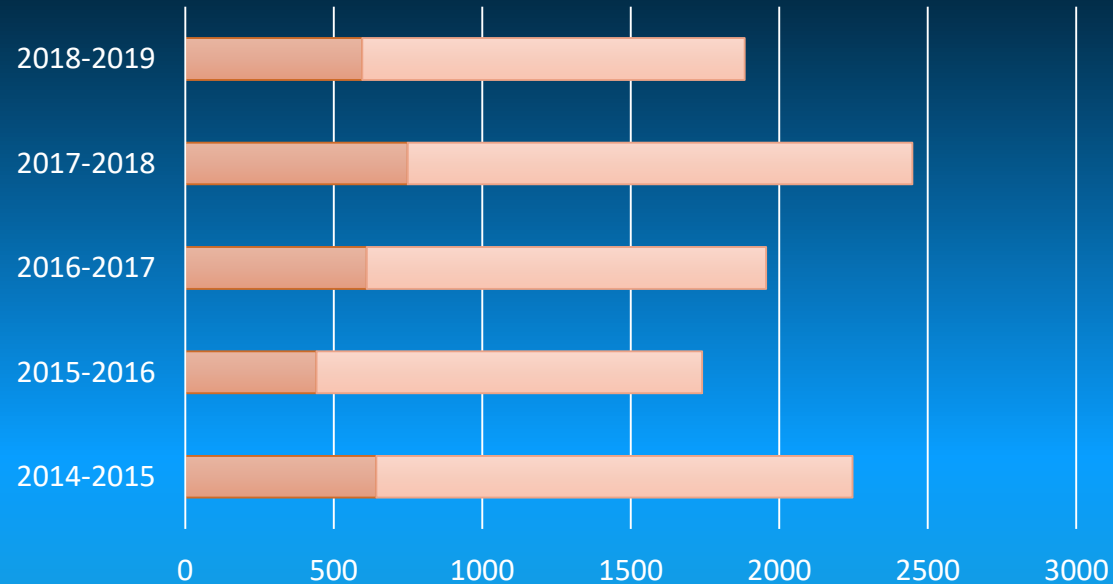
71.7% completed MAC1105
during 1st year



2016, 2017, and 2018 Cohorts

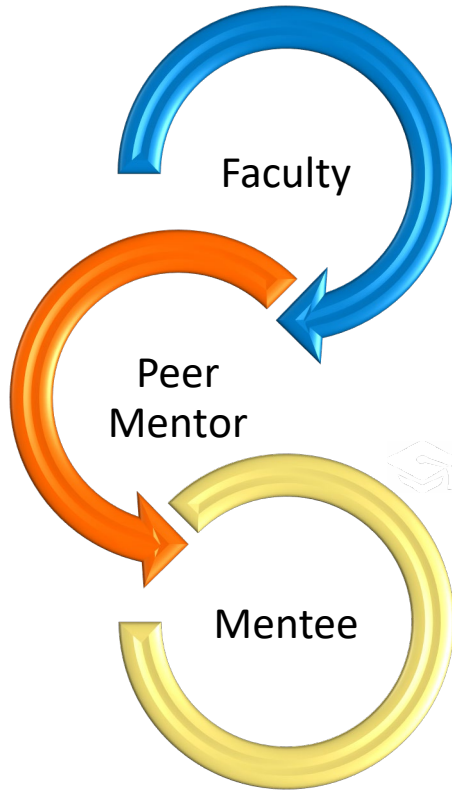


Academic Advising



	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019
■ Unduplicated Number of Students Served	643	442	611	749	596
■ Total Number of Advisement Sessions	1603	1298	1344	1699	1287

Wolf Pack Mentoring Program



Through meaningful interactions between mentors and mentees,

- seeks to drive academic success,
- the development of servant leadership skills
- enhance the campus community.



Success is Happening!

80%

Peer Mentors retained
or graduated in STEM
(N=65)

91%

Mentees retained from
1st year to 2nd year
(N=96)

3.26

Overall Average end of
year GPA of Mentees

2016 - 2018 Cohorts

STEM Events/Activities



STEM
Student
Welcome
Event



STEMinar
Series



STEM
Coffee
Hours



STEM
Field Trips



STEM Student

Tutoring: Math & Science

Academic Coaching

Resources

STEM Center

A place for studying, tutoring in STEM courses, and tips on effective study skills along with resources.

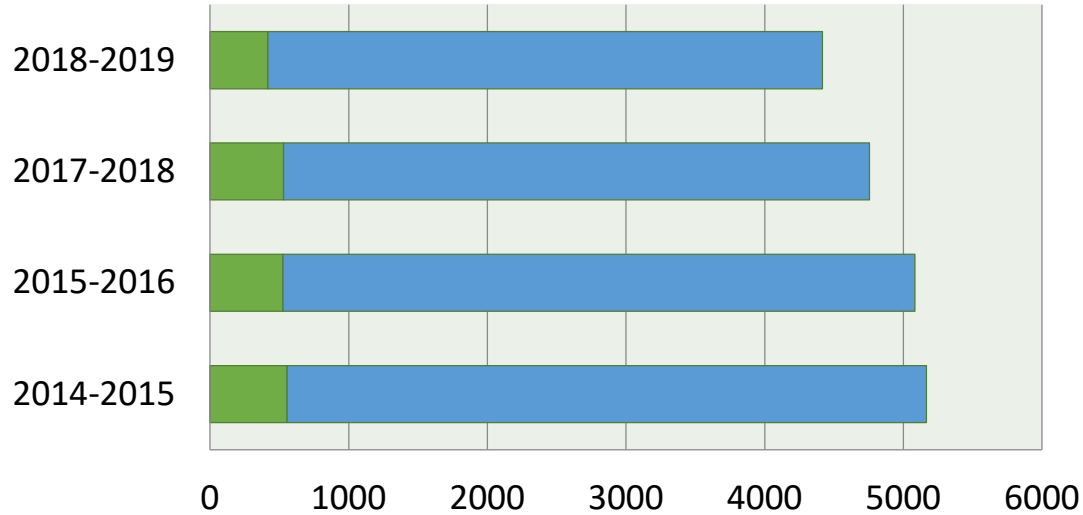
Success Center

Peer Academic Leaders

Study Skills

Academic Support

STEM Student Success Center



Reason for Visits

51% Of visits were for math or science tutoring

The remaining percentage of student come to study/complete homework (43%) or use computers (6%)

	2014-2015	2015-2016	2017-2018	2018-2019
■ Non-Duplicated Number of Students	556	526	530	417
■ Total Number of Visits	4610	4556	4225	3999

Peer-Led Team Learning (PLTL)



PLTL is a model of collaborative learning, involving students working in small groups led by trained peer academic leader.

Explore different problem-solving techniques

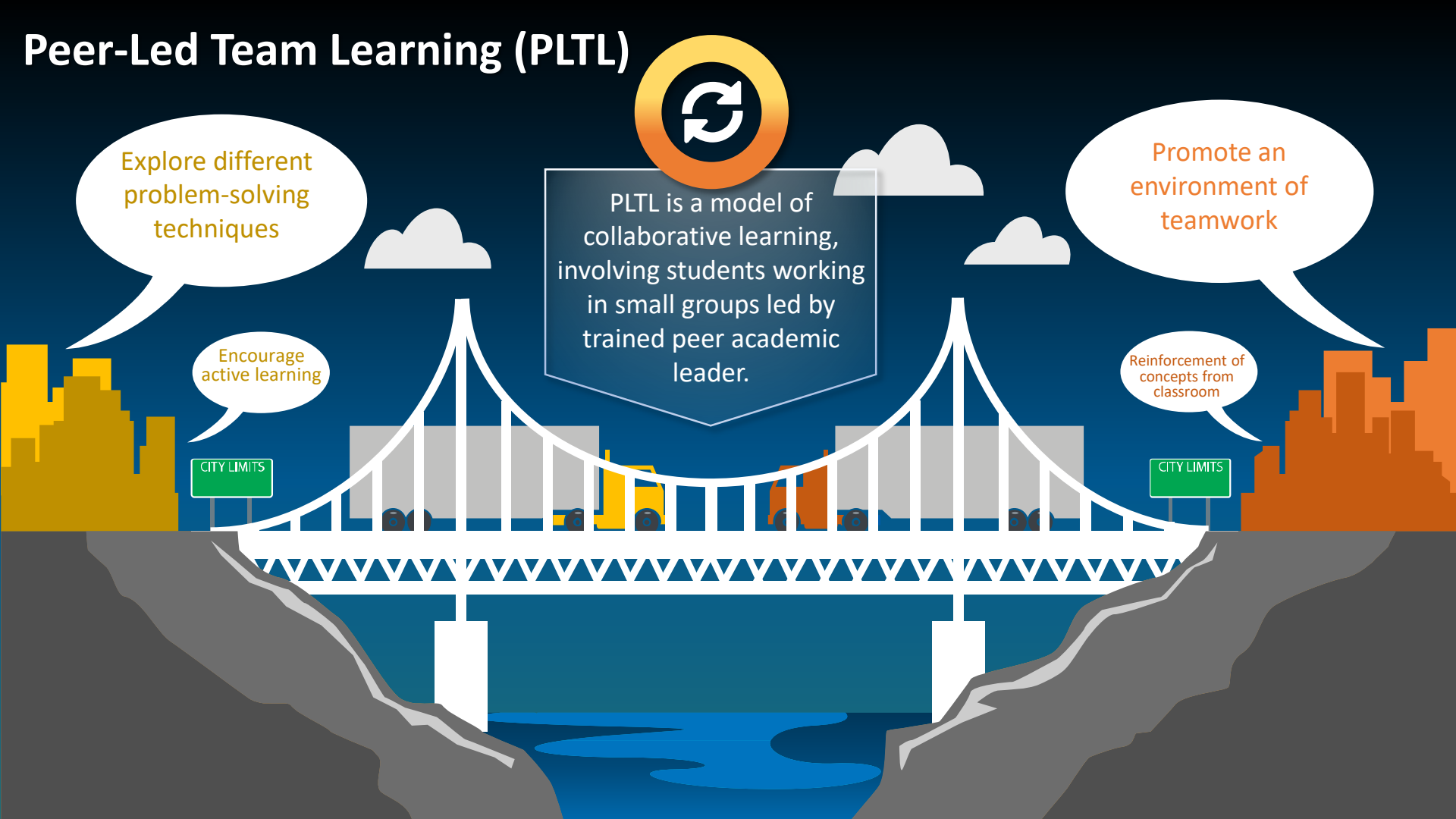
Encourage active learning

Promote an environment of teamwork

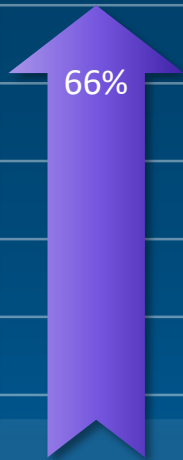
Reinforcement of concepts from classroom

CITY LIMITS

CITY LIMITS

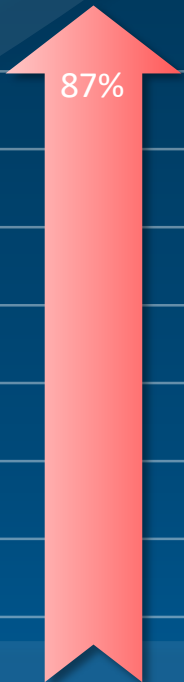


90
80
70
60
50
40
30
20
10



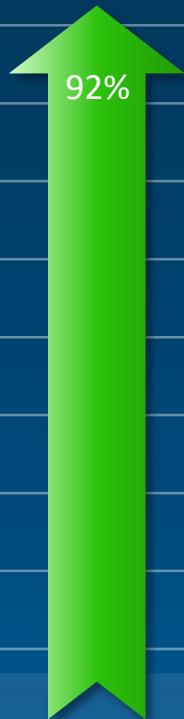
No PLTL
(Pass rates)

of students
=2883



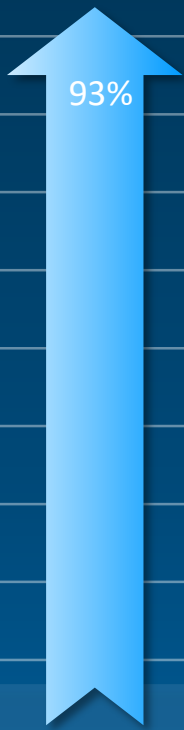
PLTL
(Pass rates)

(4+ sessions)
of students
=1,130



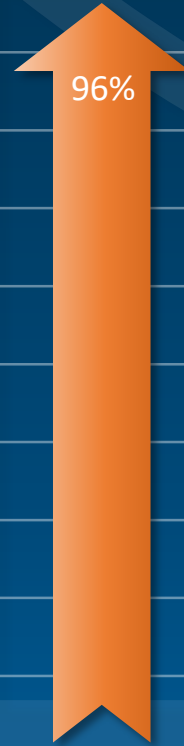
PLTL
(Pass rates)

(10+ sessions)
of students
=941



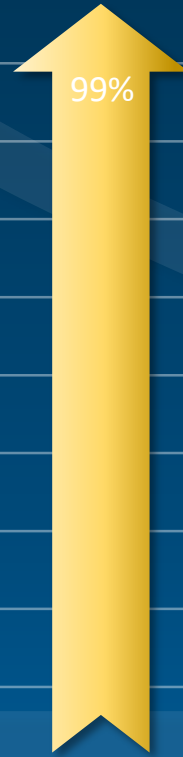
Agree or
Strongly Agree

As a result of PLTL,
they have a
better
understanding of
the material.



Very good or
Excellent

Overall rating of
PLTL



Agree or
Strongly Agree

PLTL materials
helped me
prepare for
exams.

High Impact Courses

Biology I, Chemistry I, Physics w/ Cal I & II:

- Interwoven curriculum that promotes understanding of course concepts, supplements learning through online resources, and builds connections among students and faculty.
- Links concepts from lecture with hands-on laboratory, and problem-based learning



Introduction to Chemistry with SLS1106:

- Freshman STEM Student Success course and Introductory Chemistry



Intermediate Algebra with SLS1106:

- Freshman STEM Student Success course and Intermediate Algebra

Peer-based learning courses:

- Introductory Chemistry
- Intermediate Algebra
- Pre-Calculus
- Trigonometry





Pass rates %

2015-2016

Baseline

52%



2016-2017

BSC2010/L
CHM1025 & SLS1106
PHY2048/L & PHY2049/L

77%



2017-2018

BSC2010/L; CHM1045/L
CHM1025/MAT1033 & SLS1106
PHY2048/L & PHY2049/L

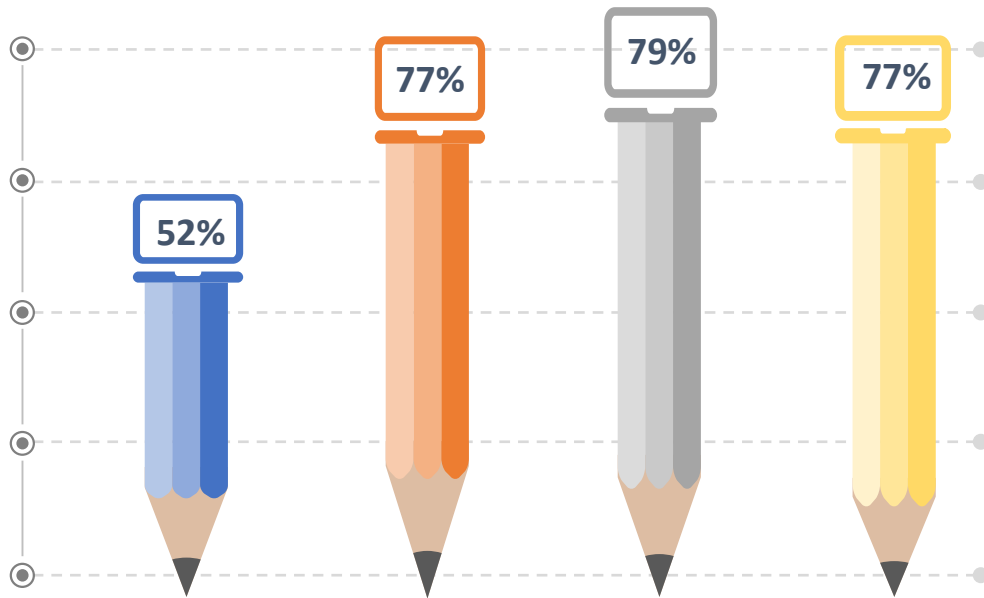
79%



2018-2019

BSC2010/L; CHM1045/L
CHM1025/MAT1033 & SLS1106
PHY2048/L & PHY2049/L

77%



Overall GPA

3.79

UM, UF
GTECH, Duke,
Cornell, FIU,
UNC, UCF

Graduated &
transferred in
STEM or
retained in STEM

Feel they can
succeed
in STEM career

94%

99%

Peer Academic Leaders (PAL)

STEM students with outstanding academic records and leadership potential the training and mentoring necessary to be academic leaders.



Undergraduate Research and Project Opportunities (URPO)



49

Student Participants

Collaborations with Faculty from MDC in Mathematics, Biology, Chemistry, Physics, Data Analytics, University of Miami, Chemistry Dept, and School of Medicine

93%

Retained/Graduated in STEM

Presented at Life Sciences South Florida STEM Undergraduate Research Symposium, North Campus Research Symposiums, PBL Expo; ACS Research Symposiums

98%

Accomplishments

Completion of research assignments (N=61); Average overall GPA of 3.76; 4 students have published

ARCOS OUTCOMES

1

70% of participants persist and/or graduate in STEM

Persistence 78% overall (92%, 84%, and 73% of students with high, medium, and low levels of participation.)

2

35% FTIC STEM graduate and/or transfer within 3 yrs.

FTIC graduation within 3 yrs.: Cohort 1- 67%, 52%, 37%
Cohort 2- 67%, 46%, 48% (For high, medium, low levels of participation.)

3

80% of graduates completed at least 50% of recommended STEM pathway courses

Year 3: 90%. 91%. 81%; Year 4: 100%, 96%, 96%
(of high, medium, and low levels of participation)



ARCOS OUTCOMES

4

60% of FTIC successful complete or place out of MAC1105

66% FTIC completed MAC1105 or above (92%, 76%, 60% for high, medium, low levels of participation.)

5

5% increase in pass rates of redesigned course

Baseline= 52% (N=1155); Re-designed= 78% (N=653)

6

80% of students successfully engaged in grant supported research/projects complete their assignments

98% complete their assignments





Questions



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