

Instructional Program Review 2019/20 UPDATE

Mathematics

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General Information (Instructional Program Review 2019/20 UPDATE)

2019/20 Instructional Program Review

SUBMISSION INFORMATION AND UPDATES (REQUIRED)

Lead Writers: Sandy Belew and Gina Abbiate

- Liason: Monica Romero
- Department Chairs: Gina Abbiate, Ken Kuniyuki and Sandy Belew
- Supervisor: Susan Topham
- Is this a CTE program? No

See Program Review File

File Attachments:

1. Program Update.docx

Program Review Update Fall 19

OUTCOMES AND ASSESSMENT (REQUIRED)

PROGRAM ANALYSIS FOR EQUITY AND EXCELLENCE (REQUIRED)

Form: 2019/20 Program Review Instructional Program Analysis Section (See appendix)

File Attachments:

1. Equity by Year and Path.xlsx

PROGRAM GOALS (REQUIRED)

2018/2019

1. Maximize the probability that students will pass a transfer-level math class within one year.

AB705 has a Fall 2019 deadline for taking appropriate steps toward compliance. Recent changes in Mesa's placement process will make it possible for more students to enroll into a transfer-level math course. As a result, we expect to see and increase in the number of students in these courses. Many of these students may need additional support getting through the transfer-level course.

Mapping

CA- Mesa College Strategic Directions and Goals: Strategic Goal 1.1, Strategic Goal 1.2, Strategic Goal 1.3

2. Promote student learning and achievement that leads to degrees, certificates, transfer, workforce training, and lifelong learning.

a. We believe that our students will be best served by strengthening communication and collaboration within the department. Given the unprecedented changes in legislation, several recent hires and several pending retirements (5-10 years), as well as the changes in our student demographic, we see this as a transitional period. We seek to optimize our department's assets, accept our differences, and strategize effectively for our current and future students. We recognize that it will take work to weave a stronger, more-integrated department that can dynamically address the range of our students' needs. b. Incorporating technology will be important for many of these paths, and diversity of pedagogic options for our students will be more important than ever.

Mapping

CA- Mesa College Strategic Directions and Goals: Strategic Goal 4.1, Strategic Goal 4.2

3. Develop support for students at all levels and modify/redesign curriculum.

a. We need to develop support to students who are not in support classes but need to improve their basic math skills. This is for both the math department and other departments in the college. b. We need to develop support for the CAP program at the high schools.

Mapping

CA- Mesa College Strategic Directions and Goals: Strategic Goal 1.1, Strategic Goal 1.2, Strategic Goal 1.3, Strategic Goal 1.4, Strategic Goal 1.5, Strategic Goal 3.1,

Institutional Learning Outcomes 2016/17: Critical Thinking

4. Enhance and expand the STEM culture and community at Mesa, equipping students for success and excellence in their future academics.

Mapping

CA- Mesa College Strategic Directions and Goals: Strategic Goal 1.1, Strategic Goal 1.3, Strategic Goal 1.4, Strategic Goal 2.1, Strategic Goal 3.1,

Institutional Learning Outcomes 2016/17: Critical Thinking

ACTION PLANS FOR GOALS (REQUIRED)

Actions

2018/2019

Goal

Goal: 1. Maximize the possibility that students will pass a transfer-level math class within one year.

Action: Decrease class caps for Support classes

Describe the actions needed to achieve this objective:	Class caps for non-transfer level course need to be reduced to 32 to increase the interaction between instructor and every student in the class. Currently with 46 students in a class the instructor does not have the opportunity to work with each student individually. Additionally, the amount of grading means that instructors are not able to make detailed comments on student work.
Who will be responsible for overseeing the completion of this objective:	department chair and dean
Provide a timeline for the actions:	Spring 2019 - Spring 2020
Describe the assessment plan you will use to know if the objective was achieved and effective:	Compare success rates of classes with lower caps to those with a cap of 46.
List resources needed to achieve this objective and associated costs (Supplies, Equipment, Computer Equipment, Travel & Conference, Software, Facilities, Classified Staff, Faculty, Other):	Increase tenure faculty

Action: Develop support classes for Math 104, 116, and 119

Describe the actions needed to achieve this objective:	Develop Learning Community classes which combine a Math 15 refresher class with the class that needs support. Eventually these classes will be modified by possibly increasing the number units and rewriting the courses.
Who will be responsible for overseeing the completion of this objective:	Department chair
Provide a timeline for the actions:	Fall 2018 to start in Spring 2019: Math 104 and 116 Spring 2019 to start in Fall 2019: Math 119 and 141
Describe the assessment plan you will use to know if the objective was achieved and effective:	Math 104 and 116 will start in Spring 2019. We will compare the success rates for those classes compared to the classes in Fall 2018. Math 119 and 141 will start in Fall 2019. We will compare the success rates for those classes compared to the classes in Fall 2018 and Spring 2019.
List resources needed to achieve this objective and associated costs (Supplies, Equipment, Computer Equipment, Travel & Conference, Software, Facilities, Classified Staff, Faculty, Other):	faculty to work on this change and monetary support for them Monetary support for a community of practice

Action: Institutionalize Mathletics

Describe the actions needed to achieve this objective:	Currently we have been offering Mathletics during summer and winter intersession. It has been sponsored for by HSI and Student Success and Equity. We would like to expand this program and institutionalize it.
Who will be responsible for overseeing the completion of this objective:	Department Chair
Provide a timeline for the actions:	Summer 2019 - Summer 2023
Describe the assessment plan you will use to know if the objective was achieved and effective:	The students would be followed through their math career and other STEM classes during their time at Mesa.
List resources needed to achieve this objective and associated costs (Supplies, Equipment, Computer Equipment, Travel & Conference, Software, Facilities, Classified Staff, Faculty, Other):	Faculty - .6 release time for 3 people food, - \$4400 for lunches and snacks

Goal: 2. Promote student learning and achievement that leads to degrees, certificates, transfer, workforce training, and lifelong learning.

- a. We believe that our students will be best served by strengthening communication and collaboration within the department. Given the unprecedented changes in legislation, several recent hires and several pending retirements (5-10 years), as well as the changes in our student demographic, we see this as a transitional period. We seek to optimize our department's assets, accept our differences, and strategize effectively for our current and future students. We recognize that it will take work to weave a stronger, more-integrated department that can dynamically address the range of our students' needs.
- b. Incorporating technology will be important for many of these paths, and diversity of pedagogic options for our students will be more important than ever.

Action: Develop support for all math students in any math class.

Describe the actions needed to achieve this objective:	We are going to develop or find videos that will supplement or review the material taught in the various math classes. We will also be developing activity books to use with the support classes or used as reference for the other non-support classes. This material can be used by the students alone or can be assigned by the instructor.
Who will be responsible for overseeing the completion of this objective:	Department chair
Provide a timeline for the	This is a long term goal so it could be started now but may not be done for 5 years.

actions:

Describe the assessment plan you will use to know if the objective was achieved and effective:

We can look at use of the material, see if there is a before use/after use or look at the success of the students using the support verses those who do not use the support.

List resources needed to achieve this objective and associated costs (Supplies, Equipment, Computer Equipment, Travel & Conference, Software, Facilities, Classified Staff, Faculty, Other):

Possible software, faculty to make the videos and review current videos and computer equipment to make videos.

Action: Provide professional development for faculty teaching the entry-level transfer classes

Describe the actions needed to achieve this objective:

Many of our adjunct faculty have taught the basic skills courses for many years. Since we are greatly decreasing the number of basic skills, these faculty will need to teach other classes which they may feel uncomfortable teaching. The faculty who are currently teaching them are encountering students with different skill levels. Both these groups need professional development to do their best in the classroom.

Who will be responsible for overseeing the completion of this objective:

course coordinators and department chair

Provide a timeline for the actions:

Fall 2019 - Spring 2020

Describe the assessment plan you will use to know if the objective was achieved and effective:

Compare success current rates with success rates after the professional development.

List resources needed to achieve this objective and associated costs (Supplies, Equipment, Computer Equipment, Travel & Conference, Software, Facilities, Classified Staff, Faculty, Other):

Faculty should receive compensation for providing professional development.

Goal: Develop support for students at all levels and modify/redesign curriculum

Action: Modify and/or redesign Math 116, 121 and 122

Describe the actions needed to achieve this objective:

Currently business and biology students need to take this sequence of classes. Some of the universities have redesigned these classes. We would like to see if there can be changes made in these courses to help improve student success.

Who will be responsible for overseeing the completion of this objective:	course coordinators and department chair
Provide a timeline for the actions:	Fall 2020 - Spring 2022
Describe the assessment plan you will use to know if the objective was achieved and effective:	Compare success rates of current classes with the revised ones.
List resources needed to achieve this objective and associated costs (Supplies, Equipment, Computer Equipment, Travel & Conference, Software, Facilities, Classified Staff, Faculty, Other):	

Action: Redesign Math 104 and 141

Describe the actions needed to achieve this objective:	These two classes need to be redesigned to satisfy the needs of the students entering the class and the requirements for the next class.
Who will be responsible for overseeing the completion of this objective:	course coordinator, department chair
Provide a timeline for the actions:	Fall 2020
Describe the assessment plan you will use to know if the objective was achieved and effective:	Compare the success rates of current classes with the redesigned ones
List resources needed to achieve this objective and associated costs (Supplies, Equipment, Computer Equipment, Travel & Conference, Software, Facilities, Classified Staff, Faculty, Other):	tenured faculty

Action: Redesign Math 118

Describe the actions needed to achieve this objective:	Math 118 is for Liberal Arts students who wish to transfer. Currently it transfers to some of the CSU campuses. We would like to redesign this course or develop another course that would also transfer to the UC system.
Who will be responsible for overseeing the completion	Faculty, department chair and dean

of this objective:	
Provide a timeline for the actions:	Fall 2020
Describe the assessment plan you will use to know if the objective was achieved and effective:	Having the curriculum adopted by the state and articulated with the CSU and UC systems
List resources needed to achieve this objective and associated costs (Supplies, Equipment, Computer Equipment, Travel & Conference, Software, Facilities, Classified Staff, Faculty, Other):	Release time for course development and research.

Goal: . Enhance and expand the STEM culture and community at Mesa, equipping students for success and excellence in their future academics.

Action: Coordinate scheduling of math courses with other STEM classes and other campuses

Describe the actions needed to achieve this objective:	The scheduler will have to contact the schedulers of the other STEM classes to make it easier for students to take the classes they need each semester. The scheduler should also be in contact with the math schedulers of the other campuses in the district to be sure that students have a wide variety of time they can take classes.
Who will be responsible for overseeing the completion of this objective:	Scheduler and dean
Provide a timeline for the actions:	On-going - This should be done each semester
Describe the assessment plan you will use to know if the objective was achieved and effective:	Students will be able to complete their math or science classes with less conflicts.
List resources needed to achieve this objective and associated costs (Supplies, Equipment, Computer Equipment, Travel & Conference, Software, Facilities, Classified Staff, Faculty, Other):	

Action: Increase the number of honors sections and honors contracts in Math 150, 151, 252, 254, 255 and 245.

Describe the actions needed to achieve this objective:	Develop generic honors contracts for these sections. Encourage faculty to develop honors sections for these classes
Who will be responsible for overseeing the completion of this objective:	course coordinators and department chair
Provide a timeline for the actions:	long-term goal
Describe the assessment plan you will use to know if the objective was achieved and effective:	The number of students who complete an honors class in math
List resources needed to achieve this objective and associated costs (Supplies, Equipment, Computer Equipment, Travel & Conference, Software, Facilities, Classified Staff, Faculty, Other):	possible software

GOAL STATUS REPORT (REQUIRED)

Action Statuses

2018/2019

Goal

Goal: 1. Maximize the possibility that students will pass a transfer-level math class within one year.

Action: Decrease class caps for Support classes

Describe the actions needed to achieve this objective:	Class caps for non-transfer level course need to be reduced to 32 to increase the interaction between instructor and every student in the class. Currently with 46 students in a class the instructor does not have the opportunity to work with each student individually. Additionally, the amount of grading means that instructors are not able to make detailed comments on student work.
Who will be responsible for overseeing the completion of this objective:	department chair and dean
Provide a timeline for the actions:	Spring 2019 - Spring 2020
Describe the assessment plan you will use to know if the objective was achieved	Compare success rates of classes with lower caps to those with a cap of 46.

and effective:

List resources needed to achieve this objective and associated costs (Supplies, Equipment, Computer Equipment, Travel & Conference, Software, Facilities, Classified Staff, Faculty, Other):

Increase tenure faculty

Status for Decrease class caps for Support classes

Current Status:

In Progress

If the Current Status was marked Completed, what was the impact of the completed objective on your program:

If the Current Status was not marked Completed, what are the implications and next steps:

The course caps for the support classes have been reduced to 36. The caps for non-support classes remain 46.

Action: Develop support classes for Math 104, 116, and 119

Describe the actions needed to achieve this objective:

Develop Learning Community classes which combine a Math 15 refresher class with the class that needs support. Eventually these classes will be modified by possibly increasing the number units and rewriting the courses.

Who will be responsible for overseeing the completion of this objective:

Department chair

Provide a timeline for the actions:

Fall 2018 to start in Spring 2019: Math 104 and 116 Spring 2019 to start in Fall 2019: Math 119 and 141

Describe the assessment plan you will use to know if the objective was achieved and effective:

Math 104 and 116 will start in Spring 2019. We will compare the success rates for those classes compared to the classes in Fall 2018. Math 119 and 141 will start in Fall 2019. We will compare the success rates for those classes compared to the classes in Fall 2018 and Spring 2019.

List resources needed to achieve this objective and associated costs (Supplies, Equipment, Computer Equipment, Travel & Conference, Software, Facilities, Classified Staff, Faculty, Other):

faculty to work on this change and monetary support for them
Monetary support for a community of practice

Status for Develop support classes for Math 104, 116, and 119

Current Status: In Progress

If the Current Status was marked Completed, what was the impact of the completed objective on your program:

If the Current Status was not marked Completed, what are the implications and next steps:

We have implemented the support classes for 96 104, 116 and 119. After a semester or 2 gathering data with for the 104X course, we will decide whether a support course for 141 is needed.

Action: Institutionalize Mathletics

Describe the actions needed to achieve this objective:

Currently we have been offering Mathletics during summer and winter intersession. It has been sponsored for by HSI and Student Success and Equity. We would like to expand this program and institutionalize it.

Who will be responsible for overseeing the completion of this objective:

Department Chair

Provide a timeline for the actions:

Summer 2019 - Summer 2023

Describe the assessment plan you will use to know if the objective was achieved and effective:

The students would be followed through their math career and other STEM classes during their time at Mesa.

List resources needed to achieve this objective and associated costs (Supplies, Equipment, Computer Equipment, Travel & Conference, Software, Facilities, Classified Staff, Faculty, Other):

Faculty - .6 release time for 3 people
food, - \$4400 for lunches and snacks

Status for Institutionalize Mathletics

Current Status: In Progress

If the Current Status was marked Completed, what was the impact of the completed objective on your program:

If the Current Status was not marked Completed,

what are the implications and next steps:

Goal: 2. Promote student learning and achievement that leads to degrees, certificates, transfer, workforce training, and lifelong learning.

a. We believe that our students will be best served by strengthening communication and collaboration within the department. Given the unprecedented changes in legislation, several recent hires and several pending retirements (5-10 years), as well as the changes in our student demographic, we see this as a transitional period. We seek to optimize our department's assets, accept our differences, and strategize effectively for our current and future students. We recognize that it will take work to weave a stronger, more-integrated department that can dynamically address the range of our students' needs.

b. Incorporating technology will be important for many of these paths, and diversity of pedagogic options for our students will be more important than ever.

Action: Develop support for all math students in any math class.

Describe the actions needed to achieve this objective:	We are going to develop or find videos that will supplement or review the material taught in the various math classes. We will also be developing activity books to use with the support classes or used as reference for the other non-support classes. This material can be used by the students alone or can be assigned by the instructor.
Who will be responsible for overseeing the completion of this objective:	Department chair
Provide a timeline for the actions:	This is a long term goal so it could be started now but may not be done for 5 years.
Describe the assessment plan you will use to know if the objective was achieved and effective:	We can look at use of the material, see if there is a before use/after use or look at the success of the students using the support verses those who do not use the support.
List resources needed to achieve this objective and associated costs (Supplies, Equipment, Computer Equipment, Travel & Conference, Software, Facilities, Classified Staff, Faculty, Other):	Possible software, faculty to make the videos and review current videos and computer equipment to make videos.

Status for Develop support for all math students in any math class.

Current Status: In Progress
If the Current Status was marked Completed, what

was the impact of the completed objective on your program:

If the Current Status was not marked Completed, what are the implications and next steps:

The Support Course leaders have put together activity materials for the support courses. We have begun to make/gather videos but have not posted them in a single locations. We have plans to use Canvas to achieve this. It is ongoing.

Action: Provide professional development for faculty teaching the entry-level transfer classes

Describe the actions needed to achieve this objective:

Many of our adjunct faculty have taught the basic skills courses for many years. Since we are greatly decreasing the number of basic skills, these faculty will need to teach other classes which they may feel uncomfortable teaching. The faculty who are currently teaching them are encountering students with different skill levels. Both these groups need professional development to do their best in the classroom.

Who will be responsible for overseeing the completion of this objective:

course coordinators and department chair

Provide a timeline for the actions:

Fall 2019 - Spring 2020

Describe the assessment plan you will use to know if the objective was achieved and effective:

Compare success current rates with success rates after the professional development.

List resources needed to achieve this objective and associated costs (Supplies, Equipment, Computer Equipment, Travel & Conference, Software, Facilities, Classified Staff, Faculty, Other):

Faculty should receive compensation for providing professional development.

Status for Provide professional development for faculty teaching the entry-level transfer classes

Current Status:

In Progress

If the Current Status was marked Completed, what was the impact of the completed objective on your program:

If the Current Status was not marked Completed, what are the implications and next steps:

This will be an ongoing process. We are in the process of creating a new role for the course coordinators. The support course CC's are holding weekly community of practice meetings to address this and other issues. Another focus is maintaining the level of mathematical rigor and acceptable practices in terms of fundamental knowledge versus provided formulas.

Goal: Develop support for students at all levels and modify/redesign curriculum

Action: Modify and/or redesign Math 116, 121 and 122

Describe the actions needed to achieve this objective:	Currently business and biology students need to take this sequence of classes. Some of the universities have redesigned these classes. We would like to see if there can be changes made in these courses to help improve student success.
Who will be responsible for overseeing the completion of this objective:	course coordinators and department chair
Provide a timeline for the actions:	Fall 2020 - Spring 2022
Describe the assessment plan you will use to know if the objective was achieved and effective:	Compare success rates of current classes with the revised ones.
List resources needed to achieve this objective and associated costs (Supplies, Equipment, Computer Equipment, Travel & Conference, Software, Facilities, Classified Staff, Faculty, Other):	

Status for Modify and/or redesign Math 116, 121 and 122

Current Status:	Not started
If the Current Status was marked Completed, what was the impact of the completed objective on your program:	
If the Current Status was not marked Completed, what are the implications and next steps:	This is not even on our radar yet.

Action: Redesign Math 104 and 141

Describe the actions needed to achieve this objective:	These two classes need to be redesigned to satisfy the needs of the students entering the class and the requirements for the next class.
Who will be responsible for overseeing the completion	course coordinator, department chair

of this objective:	
Provide a timeline for the actions:	Fall 2020
Describe the assessment plan you will use to know if the objective was achieved and effective:	Compare the success rates of current classes with the redesigned ones
List resources needed to achieve this objective and associated costs (Supplies, Equipment, Computer Equipment, Travel & Conference, Software, Facilities, Classified Staff, Faculty, Other):	tenured faculty

Status for Redesign Math 104 and 141

Current Status:	Not started
If the Current Status was marked Completed, what was the impact of the completed objective on your program:	
If the Current Status was not marked Completed, what are the implications and next steps:	This has been postponed at least until Fall 2020.

Action: Redesign Math 118

Describe the actions needed to achieve this objective:	Math 118 is for Liberal Arts students who wish to transfer. Currently it transfers to some of the CSU campuses. We would like to redesign this course or develop another course that would also transfer to the UC system.
Who will be responsible for overseeing the completion of this objective:	Faculty, department chair and dean
Provide a timeline for the actions:	Fall 2020
Describe the assessment plan you will use to know if the objective was achieved and effective:	Having the curriculum adopted by the state and articulated with the CSU and UC systems
List resources needed to achieve this objective and associated costs (Supplies, Equipment, Computer	Release time for course development and research.

Equipment, Travel & Conference, Software, Facilities, Classified Staff, Faculty, Other):

Status for Redesign Math 118

Current Status: Not started

If the Current Status was marked Completed, what was the impact of the completed objective on your program:

If the Current Status was not marked Completed, what are the implications and next steps:

We will begin on this Fall 2020. While at the SSS conference we heard about a new course that another community college has created that transfers to UC. This is a Financial Literacy course which might align with our thoughts for this course. More research is necessary.

Goal: . Enhance and expand the STEM culture and community at Mesa, equipping students for success and excellence in their future academics.

Action: Coordinate scheduling of math courses with other STEM classes and other campuses

Describe the actions needed to achieve this objective:

The scheduler will have to contact the schedulers of the other STEM classes to make it easier for students to take the classes they need each semester. The scheduler should also be in contact with the math schedulers of the other campuses in the district to be sure that students have a wide variety of time they can take classes.

Who will be responsible for overseeing the completion of this objective:

Scheduler and dean

Provide a timeline for the actions:

On-going - This should be done each semester

Describe the assessment plan you will use to know if the objective was achieved and effective:

Students will be able to complete their math or science classes with less conflicts.

List resources needed to achieve this objective and associated costs (Supplies, Equipment, Computer Equipment, Travel & Conference, Software, Facilities, Classified Staff, Faculty, Other):

Status for Coordinate scheduling of math courses with other STEM classes and other campuses

Current Status: In Progress

If the Current Status was marked Completed, what was the impact of the completed objective on your program:

If the Current Status was not marked Completed, what are the implications and next steps: Ongoing.

Action: Increase the number of honors sections and honors contracts in Math 150, 151, 252, 254, 255 and 245.

Describe the actions needed to achieve this objective: Develop generic honors contracts for these sections. Encourage faculty to develop honors sections for these classes

Who will be responsible for overseeing the completion of this objective: course coordinators and department chair

Provide a timeline for the actions: long-term goal

Describe the assessment plan you will use to know if the objective was achieved and effective: The number of students who complete an honors class in math

List resources needed to achieve this objective and associated costs (Supplies, Equipment, Computer Equipment, Travel & Conference, Software, Facilities, Classified Staff, Faculty, Other): possible software

Status for Increase the number of honors sections and honors contracts in Math 150, 151, 252, 254, 255 and 245.

Current Status: In Progress

If the Current Status was marked Completed, what was the impact of the completed objective on

your program:

If the Current Status was not marked Completed, what are the implications and next steps:

We have been offering an honors level Math 254 that utilizes the matlab software. We would like to offer more courses that use this software since students transferring are often having to learn the software in addition to the course work.

Request Forms

CLASSIFIED POSITION, BARC AND FACULTY POSITION REQUEST

Reviewers

LIAISON'S REVIEW

Form: Instructional Program Liaison's Review 2019/20 UPDATE

MANAGER'S REVIEW

Form: Instructional Program Manager's Review 2019/20 UPDATE

Appendix

A. **2019/20 Program Review Instructional Program Analysis
Section (Form)**

Form: "2019/20 Program Review Instructional Program Analysis Section"

Created with : Taskstream

Participating Area: Mathematics

Program Name

(REQUIRED) Type your program name.

Mathematics

Part A: In this section, please analyze your program in terms of course success metric. Start by disaggregating the available data by race, gender, and any other parameters of interest to your program and answer the following questions.

(REQUIRED) A1. What patterns do you notice with regard to equity in course success at the program level by race/ethnicity?

You may also conduct analysis by course and/or by modality.

Equity Gap: When a group of students who share a common characteristic (e.g. race/ethnicity) have lower access and/or outcome rates than their peers. The size of the equity gap along with the size of the group determine whether that gap is significant. Larger groups should, statistically, have smaller gaps and therefore when gaps are present (even small ones) they may be significant. Smaller groups will see wider variation in outcomes, therefore gaps should be seen consistently over time and/or reviewed by looking at multiple years in aggregate to determine if they are significant.

Over the past 5 years we have seen **increases in pass rates** across all ethnicities. The increases range from 2% to 10%, with an average of 4.3%. The current average pass rate in mathematics is 63%, the same as last year.

In the past 5 years, the largest increases were seen in two of our smaller student populations, our American Indian students and our Pacific Islander students. Our American Indian pass rate went from 63% in 2014 to 78% in 2018 (that is 15% above the current average pass rate). Our Pacific Islander students went from 50% in 2014 to 60% in 2018. While still a 3% equity gap (from the current 63% pass rate), the gap is narrowing. Though small student populations, this is promising.

Of the 9 demographics, those that fall below the average historically, are the African American and Latin X demographics. Our LatinX students saw a 4% increase in pass rates between 2014 to 2018. African Americans saw only an increase of 2%. Our African American student population is also a relatively small group. Our Asian students also saw only a 2% increase, but with the Asian demographic has historically been 10% over the average pass rate it is not a concern.

Overall, the equity gap increased by 1 point for our African American and LatinX students. The equity gap decreased by 1, from above, for our female, Asian, Filipino, Other and Unreported students. Our white male student population remained the same.

We did see some noteworthy improvements. We achieved significant improvements in the equity gap with 2 of the 3 **support courses** offered this past year. The Math 104X courses closed the LatinX equity gap from -8 below the average pass rate to 0. In our Math 96X courses offered we improved the equity gap for African Americans from -10 to -3.

Focusing on our most vulnerable groups of students:

LatinX and STEM path: For the overall STEM Path, the LatinX demographic is holding at -6 to -8 below the average.

By course within this path: The equity gap has been steadily improving for math 96, Calc II and Calc III. We have seen a positive pattern with math 96: the equity gap has improved to just -3. The equity gap has gotten larger for 104, 141 and 150. We need more support for these courses. For our LatinX students, once they make it to math 151 the equity gaps are getting progressively smaller each year (for math 151 the equity gap has gone from -15 to -4 and math 252 the gap has gone from -15 to -5).

LX and SLAM path: Overall an equity gap of -6. While the overall pass rates have been increasing, the equity gap remains.

By course within this path: equity gap improving for 116 from -8 to -5. The equity for math 121 has been fluctuating, with overall improvement for 121 (from -9 to -6) and definitely improving for 122 (from -10 to -2). The equity gap increased by 1% for statistics. We hope that with the new math 119X courses we can improve upon this.

LX and the Remedial Courses: we have seen consistent improvement for these students in math 38, math 46 and math 96 (overall moving from -4% to -2%).

African Americans and STEM path: From math 96 through Calc III we see a large fluctuation with still a quite large equity gap. There was a significant spike above the average in 2017. In math 46 and math 96 the equity gap is at -10 or less. At math 104 it jumps from -13 to -22. **This course again indicates a significant demarcation.** At math 141 and above we see even wider fluctuation.

African Americans and SLAM path: again we see extreme fluctuation between -18 to +11 with 2017 again being the outlier.

African Americans and the Remedial Courses: the equity gap here has gotten steadily better from -10 in 2015 to -5 in 2018.

(REQUIRED) A2. Do these patterns persist over time (e.g., look at the last five years)? Describe if equity gaps are increasing, decreasing, or staying the same?

Our overall pass rate maintained at 63% from 2017 to 2018.

Across all ethnicities, the equity gaps are primarily with 1% of the previous year. Across all courses within our program, the equity gaps are primarily remaining the same or improving.

See above for more in depth analysis by race/ethnicity.

One consistent pattern we see is that the students that are under 18 tend to do significantly better - from 10% to 31% over the average. The age group from 18 - 24 has a consistent drop below the average.

(REQUIRED) A3. What factors may have influenced these results? What are your most significant findings?

While our equity gaps persist and our department makes changes, these changes benefit all students, hence the increase in pass rate yet continued equity gap. At a glance, most charted data looks the same (with large fluctuations with smaller demographics).

One sequence that revealed an important need: within the STEM path: our LatinX students need additional support in the courses 104, 141 and 150. Once they reach math 151(calc II) the equity gaps are getting progressively smaller each year (for math 151 the equity gap has gone from -15 to -4 and math 252 the gap has gone from -15 to -5). We need more support for these courses to ensure that these students are able to follow this path.

Our younger students are not as likely to have as many outside obligations like work and family obligations. The students in the 18 - 24 year range are usually grappling with additional freedom and how to manage that freedom with academic obligations. At this time in life and later, our students tend to have more work and family obligations. With California becoming increasingly more expensive, our students are working even more than in past years. Managing life and college is challenging.

(REQUIRED) A4. How have you/might you alter practices to increase student success and reduce equity gaps?

We are offering four support courses: MATH 96X, MATH104X, 116X and 119X. Each of these courses is overseen by a Course Coordinator. The Coordinator holds regular community-of-practice-meetings. These meetings help provide a cohesive program and facilitate communication among the practitioners of these new courses. The meetings also help support best practices such as active learning

We are offering a Calculus I course with an emphasis on teaching during the spring semester. This is in collaboration with National University.

We are offering online and hybrid courses: math 96, math 104, math 116, math 119 and math 141.

We are offering 5 – 6 weekly faculty lead workshops to help students fill in any gaps in their knowledge and to explore concepts from class further.

This past year we started a final's exam preparation event! Juan Bernal is overseeing the End Game Event. It was a great success Spring 2019 and student's voiced their appreciation!

(REQUIRED) A5. How does your program contribute to the College's identity of being a Hispanic Serving Institution?

Our department contributes to the college's identity as a Hispanic Serving Institution with our continued participation in the STEM Core program. We offer a 1-year path for students to get through trigonometry, precalculus and calculus I. Hispanic students are recruited for this program. With this program the students receive embedded tutoring support, field trips to STEM companies and the opportunity to compete for summer internships.

(REQUIRED) A6. Have you identified resource needs? If yes, please list.

- One sequence that revealed an important need: within the STEM path: our LatinX students need additional support in the courses 104, 141 and 150. Once they reach math 151(calc II) the equity gaps are getting progressively smaller each year (for math 151 the equity gap has gone from -15 to -4 and math 252 the

gap has gone from -15 to -5). We need more support for these courses to ensure that these students are able to follow this path.

- Our African American students need more support across all courses in mathematics.
- Our students need assistance with learning what it means to be a college student. Both workshops for students and collaboration amongst faculty can help with this.
- Our students need counseling to help them create a reasonable class schedule that can be realistically handled along with their work and family expectations.
- Our students need financial assistance with textbooks and class materials. Some students have difficulty finding the money for even minimal class materials.
- While **Pass Rate** is a compelling metric, we would like to see the **Throughput Metric** implemented as well. The objective for our department is to support students so that they are both successful in their math courses at Mesa and are prepared for subsequent coursework or other endeavors. Passing a course but being unprepared for the continuing course stops the students in their educational path.

(REQUIRED) A7. Do any of your program goals address these implications or needs? If not, please develop a new goal that addresses your findings and subsequent reflection.

Yes, our goals do reflect this needs.

Part B: In this section, look at the area of focus you identified in last year's program review and answer the following questions.

(REQUIRED) B1. How have you developed this focus? Are you seeing any results? What are your next steps?

In the past year, **professional development** has been our major area of focus. We continue to encourage and support faculty to attend conferences to bring back innovative, equity minded teaching practices to be shared at department and school meetings.

Our efforts in the classroom are benefiting all students, with overall success increasing from 59% to 63% since 2014. We have dedicated, contracted faculty whose focus is on student success. If we hope to see the gap continue to close, need more productive collaboration among faculty. Our new chair team is working to achieve this.

Many in our department are incorporating active learning into the classroom. We have seen increased success rates in all of our 3 support courses. Math 96X had an increase of 4%, Math 104X an increase of 10% and Math 116X and increase of 17% above each respective standard course. While hopeful with these results, this was prior to the implementation of AB705 so we are cautious.

A major issue our department is facing is increasing student motivation and engagement. We are examining and adjusting the support services offered by our department (**Practicing with the Profs** and **Peer Mentoring**) in hopes to garner better attendance.

Since **class material costs** are another obstacle for our students, we have been applying pressure to the book reps and have made some significant headway (decreasing some costs by half).