

Schools and Divisions Program Review 2019/20 UPDATE

Dean, Math and Natural Sciences Office

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General Information (Schools and Divisions Program Review 2019/20 UPDATE)

2019/20 Schools and Divisions Program Review

SUBMISSION INFORMATION AND UPDATES (REQUIRED)

- Lead Writer - Susan Topham
- Liaison - Larry Maxey
- Manager/Service Area Supervisor - Dr. Isabel O'Connor

OUTCOMES AND ASSESSMENT (REQUIRED)

Form: 2019/20 Program Review Outcomes and Assessment Section (See appendix)

PROGRAM ANALYSIS FOR EQUITY AND EXCELLENCE (REQUIRED)

Form: 2019/20 Program Review Schools and Divisions Analysis Section (See appendix)

PROGRAM GOALS (REQUIRED)

2019/20 Goals for Dean, Math and Natural Sciences Office

Goal 1.1 Student Success

Strengthen the culture of completion by emphasizing an equity mindset in support of successful outcomes for all students.

Mapping

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

Goal 2.1 Pathways

Provide students with clear pathways for achieving their educational goals. In addition, provide faculty with guidance and support as they develop pathways in the School of Mathematics and Natural Sciences.

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

Goal 3.1 Professional Learning

Promote leadership and staff development.

Mapping

CA- Mesa College Strategic Directions and Goals: Strategic Goal 5.1, Strategic Goal 5.2

4.1 Safety

Maintenance and improvement of educational infrastructure through the optimization of facilities and related support

services to create accessible learning environment that is safe and secure.

Mapping

CA- Mesa College Strategic Directions and Goals: Strategic Goal 6.1, Strategic Goal 6.3

ACTION PLANS FOR GOALS (REQUIRED)

Actions

2019/20 Goals for Dean, Math and Natural Sciences Office

Goal

Goal: Goal 1.1 Student Success

Strengthen the culture of completion by emphasizing an equity mindset in support of successful outcomes for all students.

Action: Student Success

| | |
|---|---|
| Describe the actions needed to achieve this objective: | Through the work that is occurring the Math & Science Pathways and Enrollment Management work groups lead, collaborate and support faculty in the development of pathway maps and efficient class schedules all which will support student success and completion. |
| Who will be responsible for overseeing the completion of this objective: | Dean oversight |
| Provide a timeline for the actions: | Last year's goal of at least one pathway in each of the disciplines within Math & Science by the end of 2018-2019 academic year was achieved. We are now fine tuning the pathways to ensure that students are able to complete the pathways with minimum barriers. Enrollment management is an on-going process. |
| Describe the assessment plan you will use to know if the objective was achieved and effective: | Will continue to survey participants in each of the work groups as to the efficacy of the each of the groups. Will also survey faculty in the School to attain feedback regarding the pathways. Enrollment management work will be assessed through the data dashboards that demonstrate School's fill rates and efficiencies. |
| List resources needed to achieve this objective and associated costs (Supplies, Equipment, Computer Equipment, Travel & Conference, Software, Facilities, Classified Staff, Faculty, Other): | Faculty and assistance from Institutional Research if additional data is needed to inform decisions. |

Goal: Goal 2.1 Pathways

Provide students with clear pathways for achieving their educational goals. In addition, provide faculty with guidance and support as they develop pathways in the School of Mathematics and Natural Sciences.

Action: Pathways

| | |
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| Describe the actions needed to achieve this objective: | Provide leadership and direction in the development of School of Mathematics & Natural Sciences pathways. Ensure that faculty have the necessary tools (professional development, resources and data) to develop the maps. |
| Who will be responsible for overseeing the completion of this objective: | Dean and Faculty Chair for work group. |
| Provide a timeline for the actions: | On-going since this should be a process that is evaluated and reviewed yearly to meet the needs of the students, workforce and transfer institutions. The goal for 2019-20 is to finalize and fine tune the pathways to maximize student probability of completion. |
| Describe the assessment plan you will use to know if the objective was achieved and effective: | Once all pathway maps are developed, completion and transfer data will be monitored to ensure that students are attaining their educational goals. More immediately, faculty will be surveyed so that all have an opportunity to provide feedback and participate in the process of creating the pathways. |
| List resources needed to achieve this objective and associated costs (Supplies, Equipment, Computer Equipment, Travel & Conference, Software, Facilities, Classified Staff, Faculty, Other): | N/A |

Goal: Goal 3.1 Professional Learning

Promote leadership and staff development.

Action: Professional Learning

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| Describe the actions needed to achieve this objective: | Develop a culture for all employees that supports professional growth, intra and inter departmental collaboration, institutional memory, and leadership continuity. Actions will include, but are not limited to the following: <ol style="list-style-type: none">1. Establish professional development as an equal opportunity to be extended to all employees, faculty & staff.2. Take an inventory of how often professional development inventories are available to faculty and staff.3. Expand awareness among faculty and staff of available professional development opportunities. |
|---|--|

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|---|---|
| | 4. Implement leadership development at all levels and cross-training programs to facilitate leadership transitions and enhance school resilience. |
| Who will be responsible for overseeing the completion of this objective: | Dean with the assistance of Chairs |
| Provide a timeline for the actions: | Updated - ongoing |
| Describe the assessment plan you will use to know if the objective was achieved and effective: | In Spring 2020 survey faculty and staff to gage their knowledge of professional development opportunities at Mesa College. In addition, seek to understand the barriers to participation in professional learning. Develop performance measures to include: <ul style="list-style-type: none"> • Participation rate • # of attendees • Staffing and succession plans developed • Opportunities for advancement • Opportunities to develop leadership skills |
| List resources needed to achieve this objective and associated costs (Supplies, Equipment, Computer Equipment, Travel & Conference, Software, Facilities, Classified Staff, Faculty, Other): | Established a Math & Science Professional Learning Workgroup in fall 2019 which comprises of discipline faculty. Work will begin spring 2020 |

Goal: 4.1 Safety

Maintenance and improvement of educational infrastructure through the optimization of facilities and related support services to create accessible learning environment that is safe and secure.

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|---|---|
| Action: Safety | |
| Describe the actions needed to achieve this objective: | Optimize facilities and related support services to create an accessible learning environment that is safe and secure. This will be achieved through: <ol style="list-style-type: none"> 1. Ensure safety compliance to meet all areas of regulation, requirements, and reporting. 2. Expand safety training for students, faculty and staff. 3. Engage all sectors of the campus community (i.e. business office and facilities) in the planning process. |
| Who will be responsible for overseeing the completion of this objective: | Dean |
| Provide a timeline for the actions: | Fall 2020 |
| Describe the assessment | Develop a comprehensive list of maintenance/service agreements. In addition, |

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

development of a comprehensive list of all yearly safety compliance reviews and training needed.

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

Financial resources for maintenance agreements. Currently, there is no stable source of funding for this . As needs come up, dollars need to be requested and identified through various budgets.

GOAL STATUS REPORT (REQUIRED)

Action Statuses

2019/20 Goals for Dean, Math and Natural Sciences Office

Goal

Goal: Goal 1.1 Student Success

Strengthen the culture of completion by emphasizing an equity mindset in support of successful outcomes for all students.

Action: Student Success

Describe the actions needed to achieve this objective:

Through the work that is occurring the Math & Science Pathways and Enrollment Management work groups lead, collaborate and support faculty in the development of pathway maps and efficient class schedules all which will support student success and completion.

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

Dean oversight

Provide a timeline for the actions:

Last year's goal of at least one pathway in each of the disciplines within Math & Science by the end of 2018-2019 academic year was achieved. We are now fine tuning the pathways to ensure that students are able to complete the pathways with minimum barriers. Enrollment management is an on-going process.

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

Will continue to survey participants in each of the work groups as to the efficacy of the each of the groups. Will also survey faculty in the School to attain feedback regarding the pathways.

Enrollment management work will is assessed through the data dashboards that demonstrate School's fill rates and efficiencies.

List resources needed to achieve this objective and associated costs (Supplies,

Faculty and assistance from Institutional Research if additional data is needed to inform decisions.

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

Status for Student Success

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: Goal 2.1 Pathways

Provide students with clear pathways for achieving their educational goals. In addition, provide faculty with guidance and support as they develop pathways in the School of Mathematics and Natural Sciences.

Action: Pathways

| | |
|--|---|
| Describe the actions needed to achieve this objective: | Provide leadership and direction in the development of School of Mathematics & Natural Sciences pathways. Ensure that faculty have the necessary tools (professional development, resources and data) to develop the maps. |
| Who will be responsible for overseeing the completion of this objective: | Dean and Faculty Chair for work group. |
| Provide a timeline for the actions: | On-going since this should be a process that is evaluated and reviewed yearly to meet the needs of the students, workforce and transfer institutions. The goal for 2019-20 is to finalize and fine tune the pathways to maximize student probability of completion. |
| Describe the assessment plan you will use to know if the objective was achieved and effective: | Once all pathway maps are developed, completion and transfer data will be monitored to ensure that students are attaining their educational goals. More immediately, faculty will be surveyed so that all have an opportunity to provide feedback and participate in the process of creating the pathways. |
| List resources needed to achieve this objective and associated costs (Supplies, Equipment, Computer | N/A |

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

Status for Pathways

Current Status:

Completed

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

Each of the disciplines in math and science have a pathway identified. However, the goal has been updated to the next level/stage which is fine tuning to maximize to students' probability of completion through a review of courses required and services needed.

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

Goal: Goal 3.1 Professional Learning

Promote leadership and staff development.

Action: Professional Learning

Describe the actions needed to achieve this objective:

Develop a culture for all employees that supports professional growth, intra and inter departmental collaboration, institutional memory, and leadership continuity. Actions will include, but are not limited to the following:

1. Establish professional development as an equal opportunity to be extended to all employees, faculty & staff.
2. Take an inventory of how often professional development inventories are available to faculty and staff.
3. Expand awareness among faculty and staff of available professional development opportunities.
4. Implement leadership development at all levels and cross-training programs to facilitate leadership transitions and enhance school resilience.

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

Dean with the assistance of Chairs

Provide a timeline for the actions:

Updated - ongoing

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

In Spring 2020 survey faculty and staff to gage their knowledge of professional development opportunities at Mesa College. In addition, seek to understand the barriers to participation in professional learning.

| | |
|---|--|
| List resources needed to achieve this objective and associated costs (Supplies, Equipment, Computer Equipment, Travel & Conference, Software, Facilities, Classified Staff, Faculty, Other): | Develop performance measures to include: <ul style="list-style-type: none"> • Participation rate • # of attendees • Staffing and succession plans developed • Opportunities for advancement • Opportunities to develop leadership skills Established a Math & Science Professional Learning Workgroup in fall 2019 which comprises of discipline faculty. Work will begin spring 2020 |
|---|--|

Status for Professional Learning

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: 4.1 Safety

Maintenance and improvement of educational infrastructure through the optimization of facilities and related support services to create accessible learning environment that is safe and secure.

Action: Safety

| | |
|---|---|
| Describe the actions needed to achieve this objective: | Optimize facilities and related support services to create an accessible learning environment that is safe and secure. This will be achieved through: <ol style="list-style-type: none"> 1. Ensure safety compliance to meet all areas of regulation, requirements, and reporting. 2. Expand safety training for students, faculty and staff. 3. Engage all sectors of the campus community (i.e. business office and facilities) in the planning process. |
| Who will be responsible for overseeing the completion of this objective: | Dean |
| Provide a timeline for the | Fall 2020 |

actions:

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

Develop a comprehensive list of maintenance/service agreements. In addition, development of a comprehensive list of all yearly safety compliance reviews and training needed.

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

Financial resources for maintenance agreements. Currently, there is no stable source of funding for this . As needs come up, dollars need to be requested and identified through various budgets.

Status for Safety

Current Status:

Not Implemented

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:

Funding source and knowledge are barriers to the completion of this goal. There are various technical aspects of this goal and specific expertise needed. Unfortunately, there is no staffing that possess this comprehensive knowledge thus the request for an Instructional Lab Supervisor.

Request Forms

CLASSIFIED POSITION, BARC AND FACULTY POSITION REQUEST

Reviewers

LIAISON'S REVIEW

Form: Schools and Divisions Liaison's Review 2019/20 UPDATE

MANAGER'S REVIEW

Form: Schools and Divisions Manager's Review 2019/20 UPDATE

Appendix

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- A. **2019/20 Program Review Outcomes and Assessment Section** (Form)
 - B. **2019/20 Program Review Schools and Divisions Analysis Section** (Form)
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Form: "2019/20 Program Review Outcomes and Assessment Section"

Created with : Taskstream

Participating Area: Dean, Math and Natural Sciences Office

(REQUIRED) Program name

School of Mathematics & Natural Sciences

(REQUIRED) Are you on target with your assessment schedule?

Overall, progress has been made over as it relates to assessing the school's administrative outcomes. Assessments in support the outcomes have been implemented. These occur through analysis of data provided through the Office of Institutional Effectiveness, qualitative assessment in the form of discussions and compliance inspections (safety).

(REQUIRED) What have your assessments revealed about your courses/programs/service area/school/division/office?

The past year has proven to be a very turbulent year for our School due to changes in state mandates, implementation of new systems and changes in curriculum. Therefore, the information gathered is not demonstrative of the efforts that have taken place. We have had to make many changes without proper support and in some cases knowledge thus at this point not truly being able to implement and assess our initiatives in a comprehensive and effective manner. The office of the dean continues to diligently support the various departments/disciplines/programs by providing human resources and in some cases minimal monetary support. It is evident that additional funding is needed to support faculty in professional learning activities and that staff need support and training to ensure safety requirements in labs are enforced.

(REQUIRED) Based on your assessments, what resource needs have you identified?

1. More comprehensive safety training program for faculty and staff
2. Ability to provide faculty who are developing curriculum more time to develop and assess the curriculum improvements/changes
3. Development of a research agenda that is STEM focused and addresses the math and science curriculum, students and faculty

Please provide any other comments.

It is important to note that a great deal of time has been spent with faculty not only at Mesa College about also across the district discussing the challenges of AB 705 and the impact of the implementation of the new mandates on STEM majors. This is all new territory for most and while initially it was assumed that it would only affect math, the ripple has been felt across all STEM majors since math is a pre-requisite for many gateway STEM courses. Therefore, the assessments that have been conducted throughout the year have been evolving as new challenges are identified. As mentioned above, it is clear that time needs to be dedicated to developing a research agenda and instruments that are meaningful and demonstrative of the curricular changes occurring.

Form: "2019/20 Program Review Schools and Divisions Analysis Section"

Created with : Taskstream

Participating Area: Dean, Math and Natural Sciences Office

School/Division Name

(REQUIRED) Type your School/Division name.

School of Mathematics and Natural Sciences

Part A: In this section, please analyze your School or Division in terms of student success metrics as well as your contribution to the College's identity of being an Hispanic Serving Institution.

(REQUIRED) A1. What metric(s) are you following most closely?

Equity trends and circumstances varied strongly by department during the past three years. As a school, in general, we continue to tackle the equity gaps in STEM by following data that is available to us. The metrics currently used are those provided through the Office of Institutional Research and the Mesa's Equity Plan, more specifically enrollment and success rate data. However, this past year, the chairs and I have acknowledged that there is a need for a more comprehensive STEM research agenda that will allow us to do a deeper dive into Mesa's STEM data. More specifically, student preparedness as it relates to math pathways completed, fulfillment of pre-requisites and how they were completed.

(REQUIRED) A2. Have you identified any racial/ethnic groups that are experiencing equity gaps in any of these metrics?

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.

African-American and Latin X students continue to struggle specifically in the completion of STEM math pathways. Completion of math 96 continues to be a huge barrier for our students and more so for our underserved populations. Since math is an entry point for our STEM students, the leadership of the school, not only math faculty, have spent a great deal of time discussing best practices and sharing information that may help address some of these challenges. In general, our under served population are approximately ten percentage points behind our non-underserved students.

(REQUIRED) A3. What action, if any, has been taken to address these equity gaps?

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.

The following actions have taken to address equity gaps within the School of Mathematics & Natural Sciences:

- Professional learning opportunities through supporting faculty attendance in conferences and workshops (nationally and locally)
- Collaboration with other departments across the college (STEM Connexiones, Tutoring, Student Services) to leverage financial and human resources
- Provide faculty with a space to have robust dialogue around this topic across disciplines in the school meetings
- Actively participate in district and regional dialogue around equity gaps such as the implementation of AB 705 (curriculum and placement)
- Bring faculty from STEM disciplines and Counseling together to develop Mesa Pathways in each of the majors offered within the school. As such, we are in the final stages of completion.

(REQUIRED) A4. What actions, if any, have you taken as a result of the School Equity Reports?

The dean and representatives of each of the disciplines have determined the need to obtain more STEM related data to clearly understand our shortfalls and needs of students. More specifically, student preparedness as it relates to math pathways completed, fulfillment of pre-requisites and how they were completed. Some of the data components are not applicable to the programs such as ACP where the student representation is not necessarily determined by the program but by the high school site.

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

The School works very closely with our HSI Title III STEM partners. Our faculty lead some very impactful initiatives such as the STEM Peer Mentoring Program. This program was piloted in the fall 2018 with the goal of supporting STEM students in courses that have low success rates. This courses include BIO 210A, CHEM 200, PHYS 195 and MATH 150. Later the program was expanded to include PHYS 196, MATH 151 and MATH 252. The peer mentoring program strives to build a community of STEM majors that can support each other in their academic goals. The mentoring program brings together discipline faculty and students who have successfully completed the course (mentors) and students who are currently enrolled in the class (mentees). The ultimate goals is to increase course completion and persistence rates of STEM students by giving them a more in-depth approach to higher education which will hopefully translate to increased graduation rates of our LatinX students.

Recently, our School and faculty have been heaving involved in two grants. The Teacher Education Pipeline which is a collaboration between San Diego Unified School District, National University and Mesa College to identify high school students who may be interested in becoming STEM high school teachers. We are currently developing an infrastructure and curriculum to support this pipeline. Faculty in both math and physical sciences have been working with Mesa's Teacher Education faculty and HSI staff on this initiative. In addition to

the pipeline grant, early in the fall in collaboration with Mesa's STEM Conexiones to submit a \$300,000 HSI NSF grant that would support the promotion of STEM education to LatinX students and provide them support and research opportunities while they were at Mesa. These activities would increase students' opportunities for transfer to four year institution.

Lastly, we have strengthened our collaboration with the HSI funded STEM Center and Mesa's Tutoring programs. We have spent many hours over the past year identifying and implementing strategies for increasing student participation in these areas. Some of the strategies included identification of faculty liaisons and tutors, tutor training and providing input to the expansion of the STEM Center on first floor of the LRAS.

We acknowledge that there is great work to accomplish in this area as such a professional learning work group has been established. This is led by the dean and has representation from each of the disciplines including ACP. Here the goal is develop learning opportunities within the school that are specifically STEM related. This area has also been identified as a need by the faculty and staff.

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?

Creating equitable opportunities is dependent upon having inclusive policies and practices that represent all students, and providing each student increased access to and creating meaningful participation in high-quality learning experiences where each student realizes positive outcomes.

1. Prioritize equity: Set and communicate a vision and targets for high outcomes for all students.
2. Start from within: Focus on leadership, diversity and inclusiveness.
3. Measure what matters: Use relevant and meaningful data. Hold each other accountable for equity.
4. Monitor equitable implementation of standards: Improve the quality of curriculum and instruction for all students.
5. Value people: Focus on teachers and leaders. Develop the people you have. Ensure equitable access to the best instructors.
6. Improve conditions for learning: Focus on school culture, climate and social-emotional development. Connect teaching to the experiences, assets and needs of students.
7. Give students options: Empower students with high-quality options to support every learner's success.

One can definitely observe and sense a change in the culture of the school, one that is more open to dialogue and self-reflection. While not everyone has embraced this, we will definitely continue on this path with the understanding that it is a slow change and that we will not have buy-in from all.