

## 2017-18 Administrative Leadership Unit Review of Science, Math, and Technology

### I.A. Profile: Unit Purpose

What is the purpose of the unit and how does it contribute to the mission of Skyline College?

#### **Narrative**

Skyline College's Science, Math, and Technology division serves a diverse community of learners and provides student-centered education leading to transfer to baccalaureate institutions and career employment. The division provides students with multi-disciplinary courses of study in science, math, and allied health and technology career programs. Students develop critical thinking, communicate in written and oral form, develop computer and information literacy, and engage in citizenship.

**I.B. Profile: Programs**

Which programs or functions are contained within the unit?

**Narrative**

The following programs are housed in the Science, Math, Technology (SMT) division: Administrative Medical Assisting, Biology, Biotechnology, Chemistry, Earth Sciences (Environmental Science, Geology, Oceanography), Emergency Medical Care, Engineering & Computer Science, Energy Systems Technology Management, Health Sciences, Mathematics, Network Engineering Technologies and Electronics, Physics & Astronomy, Respiratory Care, and Surgical Careers (Anesthesia Technology, Central Services Technology, and Surgical Technology).

First Year Experience (FYE) and Math Academy learning communities are also housed in the SMT division. The emerging STEM center also includes the MESA Center and FAB LAB.

**I.C. Profile: Service Area Outcomes**

List the current service area outcomes for the unit.

**Narrative**

1. Students served will have access to a breadth and quality of lower division education to effectively complete certificates and associates degrees (including associate degrees for transfer), and to enable transfer to baccalaureate institutions
2. Students served will receive quality career and technical education and training in cooperation with business, industry, labor, and public service agencies to become employable in their industry of choice
3. Students served will receive support in academic and college skills to support their success as they progress through their academic goals
4. Students will experience a variety of services and division sponsored events related to science, math, and technology that will enhance and support their academic goals

## II.A. Analysis: Unit Effectiveness

Review data related to the administrative unit and assess the unit's effectiveness at meeting its described purpose. Data should include, but is not limited to, the CPRs/APPs submitted within the last year by programs within the administrative unit.

Describe the unit's effectiveness including identification of achievements and/or areas in which further effort is needed. Comment on progress made towards previously established unit objectives.

### Narrative

The SMT division last year identified the following goals in supporting the overall Skyline College Promise:

- Launch of certificate and degree for Biotechnology program set for Fall 2018. These are in alignment with the pilot community college BS in Biomanufacturing degrees.
- Continued establishment of a STEM center to support all students in declaring a STEM major. District innovation funds were allocated and a Program Services Coordinator was hired to provide support as the STEM center is built out. An HSI-NSF grant has been awarded for 3.7 million dollars and will begin October 2018.
- Increase hybrid and online instruction to support access and help address decreased classroom space during construction of new buildings. 4 faculty have undergone distance education training and will begin offering online/hybrid instruction beginning Fall 2018.
- The budding STEM center continues to provide embedded tutoring support for various discipline STEM courses through funding from MESA and the HSI-NSF grant for the 2018-2019 academic year. The goal is to increase retention and success. Success rates will be evaluated for the 17-18 year.
- SMT continues to collaborate with the Career and Workforce Programs department to support marketing and recruitment strategies for CTE programs. The work is continuing to increase enrollment in lower enrolled programs such as Biotechnology, and Energy System Management Technology. Due to low demand and enrollment, the Administrative Medical Assisting Program will be put on hiatus for the 18-19 year and a labor market study will be done in collaboration with Career and Workforce Programs to identify a plan of action.
- Math faculty are streamlining the basic skills Math courses for students needing preparation for transfer level courses. Beginning Fall 2018, lowest levels of Math and longer pathway in the algebra sequence will no

longer scheduled (Math 110, Math 111, Math 112, Math 122, Math 123, Math 811).

- The department has developed and will be offering link co-requisite Math courses to offer in time instruction support to improve student learning outcomes (Math 120+Math 820, Math 200+800).
- Faculty continue to engage in professional development regarding pedagogical practices to improve student success.
- The division graduated its first Bachelor's in Science in Respiratory Care cohort.

## II.B. Analysis: Progress on Outcomes

Describe the progress on service area outcomes, conclusions drawn, and expected use of results.

### Narrative

Quality CTE Programs - Respiratory Care has maintained high certification and employment rates. Surgical Technology continues to struggle with retention and success and certification participation. The retention and success for the 2016 reporting is still below threshold at 55%. However, there is an upward trend for the most recently graduated class. The participation rate for certification must be at 100%. Beginning this academic year all student will be provided a preparation course and be required to take the certification exam upon completion.

The SMT division continues to provide a variety of services and division sponsored events related to science, math, and technology to enhance and support academic goals. These include: Expanding your Horizons, Science Symposium, SMT and S-STEM Scholarship, MESA center, SACNAS student attendance, Science in Lecture Series, Respiratory Care – Surgical Technology job fairs, Sustainability Action Network meetings, Earth Day. Clubs - Phi Theta Kappa, American Medical Student Association, SACNAS, Skyline Environmental Go Green, Respiratory Care, Robotics, Skyline Science and Research, Surgical Technology. The division is prioritizing a STEM center to be located on the 3rd floor of building 7 and will provide full academic and student support services for any student who identifies in STEM.

## II.C. Analysis: Unit Environment

Describe key factors and changes impacting the unit such as college initiatives, industry needs, regulatory changes, state mandates, grant requirements, personnel changes, demand for classes/services, and other issues.

### Narrative

- Skyline College Promise and redesign in guided pathways
- Continued increased student interest in STEM academic/career pathways
- Completion of grant funding for Career Advancement Academies
- Completion of grant award – SVETP for Biotechnology, Engineering, and ICT
- S-STEM grant award - 3 year funding for STEM scholarships.
- NSF-HSI grant award - 5 year funding for Engineering pathway and STEM Center (3.7 million)
- Continuation of CTE Enhancement Funds – 200 million for BACCC
- Multiple measures placement for students into transfer level math courses
- Model practices in supporting acceleration and success through the math sequence (co-requisite model)
- Legislation allowing baccalaureate degree offerings at CA community colleges for Respiratory Care and Biomanufacturing

## II.D. Analysis: Unit Personnel

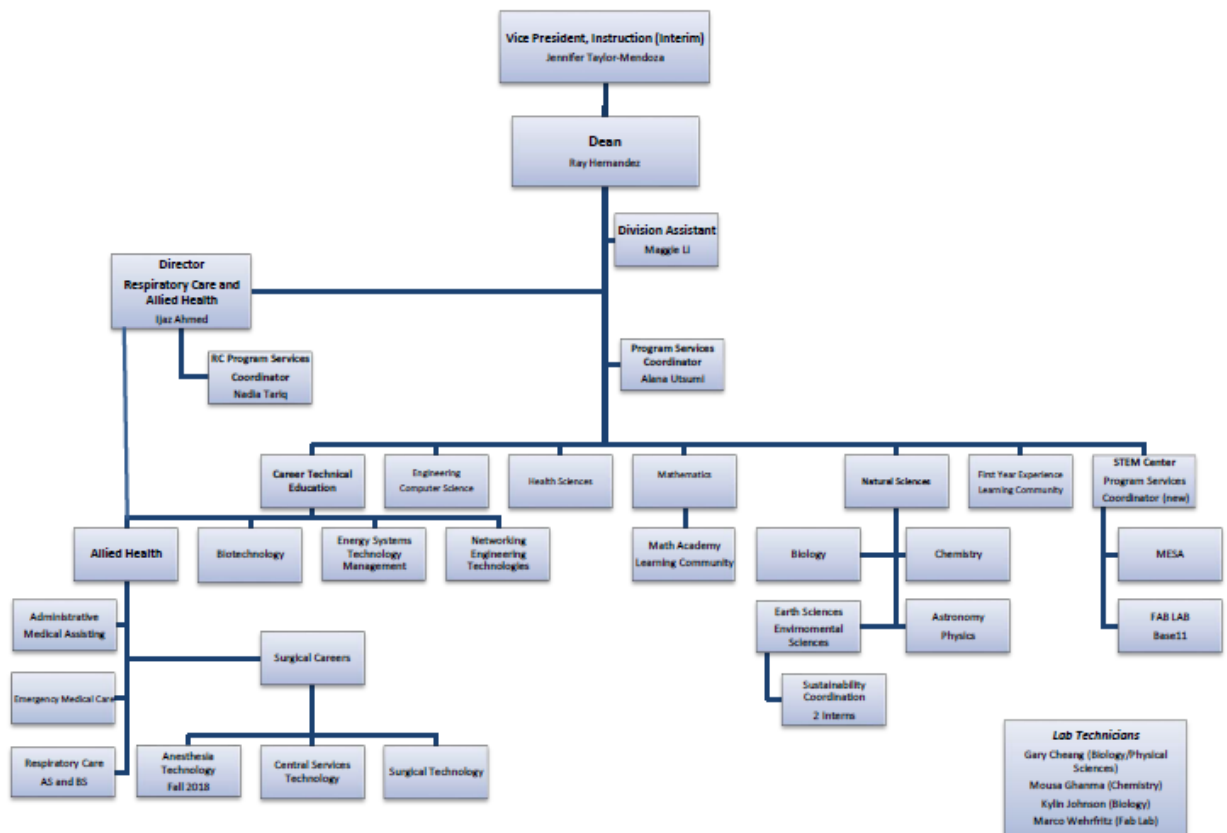
Describe the current staffing structure of the unit and how it aligns with achieving the purpose of the unit. Attach the current organizational chart (an image of the org chart can be inserted in the box). Provide staffing FTE by category (FT/PT faculty, permanent staff, temporary staff, student workers, administrators).

HINT: To display the information in a table, it is easiest to create the table in Word and paste into the narrative box.

### Narrative

Skyline College's Science, Math, and Technology division serves a diverse community of learners and provides student-centered active and relevant pedagogical education leading to degree attainment, transfer to baccalaureate institutions, and career employment. The division provides students with multi-disciplinary courses of study in science, math, and allied health and technology career programs. Students develop critical thinking, communicate in written and oral form, develop computer and information literacy, and engage in citizenship. The current organizational structure for SMT is as follows:

**Science, Technology, Engineering, Math (STEM) – Organizational Chart**



SMT Org Chart

Update 8/2017



Current staffing positions to support the SMT division's missions and goals are:

<b>Administration:</b>		
Dean	Raymond Hernandez	1.0
Academic Supervisor – Allied Health, Respiratory Care	Gretchen Keys	1.0
<b>Classified Staff:</b>		
Administrative Assistant	Maggie Li	1.0
Program Services Coordinator (SMT)	Nadia Tariq	1.0
Program Services Coordinator (STEM)	Ana Gutierrez-Gamez	1.0
Program Services Coordinator (RPTH)	Alana Utsumi	1.0
Lab Tech (Biology)	Kylin Johnson	1.0
Lab Tech (Chemistry)	Mousa Ghanma	1.0
Lab Tech (Biol/Chem)	Gary Cheang	1.0
Lab Tech (FAB LAB)	Marco Wehrfritz	1.0
<b>Hourly Staff: Short Term</b>		
(1) BIOL Instr Aide II	Biology lab instructional support	Short term hours vary throughout year
(6) EMC Instr Aide I	Lab practice and testing – assisting lab faculty (accred requirement)	
(4) EMC Instr Aide II	Lab assistant, materials preparation	
(1) FAB Lab Lab Tech	Lab assistant - lab instructional support	
(2) RPTH Instr Aide II	Instructional Tutoring for RPTH BS degree students	
(1) RPTH Instr Aide II	Lab assistant - lab instructional support	
(1) SURG Instr Aide II	Tutoring to support successful completion	
(1) SURG Instruct Aide II Tutor	Tutoring to support successful completion	
(1) Program Services Coord (S-STEM)	Provide case management for S-STEM scholarship recipients (grant funded)	

<b>Student workers:</b>		
(3) Biology - Federal Work Study	Assist with lab stockroom and lab preparation	Hours vary
(1) Biology – General Fund 1 TA	Assist with lab preparation	
(2) Chemistry – Federal Work Study	Assist with lab stockroom and lab preparation	
(18) MESA – FedWrk Stdy/MESAgrant	Assist with lab stockroom and lab preparation	
(1) Physics – General Fund 1 TA	Provide peer tutoring support (MESA grant funded)	
(1) NETX – General Fund 1 TA	Assist with lab stockroom and lab preparation	
	Assist with lab support in instructional network labs	
<b>FT - Faculty Reassigned Time:</b>		
Biotech Coordination	Coordination of Biotech program	0.2
Energize Colleges Coordination	Coordination of Energize Colleges and Sustainable Initiative	0.2
Engineering Coordination	Coordination of Engineering, Computer Science, and FAB LAB	0.2
First Year Experience (FYE) Coord	Coordination of Engineering, Computer Science, and FAB LAB	0.2
GEOL Program Coordination	Coordination of FYE learning community	0.1
Math Academy (ASTEP) Coordination	Coordination of Earth Science program/restructure	0.07
Math Department Coordination	Coordination of ASTEP Math Academy functions	0.20
Math TRiO Coordination	Coordination of ASTEP Math Academy functions	0.47
MetaMajors/Guided Pathways Coord	Coordination of Math meetings and discipline focused work	0.6
MESA Coordination	Coordination of Math TRiO component of program (TRiO grant)	1.0
NETX Coordination	Coordination of Math TRiO component of program (TRiO grant)	0.1
SURG Coordination	Coordination of MetaMajors/Guided Pathways – College Initiative	0.2
Sustainable Initiative Coordination	Coordination of MESA program (Fund 1)	0.2
Service Learning Coordination		0.1
Engineering Tech Scholars Coord		0.07

	Coordination of NETX program (Strong Workforce funds)  Coordination-various programmatic/ accreditation responsibilities  Coordination of sustainable initiative activities  Coordination of service learning within ASLT division  Coordination of MATH/ETS program	
<b><i>PT – Faculty Reassigned Time:</i></b>		
ANST Coordination	Coordination-various programmatic/accreditation responsibilities	0.2
EMC Coordination	Coordination-various programmatic/accreditation responsibilities	0.2
SURG Clinical Coordination	Coordination-various programmatic/accreditation responsibilities	0.2
	Coordination-various programmatic responsibilities/clerkships	

Staffing Profile (Please indicate the number in terms of FTE. (i.e. a full time staff =1 FTE / and a half time staff =.5 fte)

Position	Staffing Levels for Each of the Previous four years as of July 1				Anticipated total staff needed as of July 1				
	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23
Administration	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Classified Staff FT	5.0	5.0	7.0	8.0	12.0	12.0	12.0	12.0	12.0
Classified Staff PT	-	-	-	-	-	-	-	-	-
Confidential Staff FT	-	-	-	-	-	-	-	-	-
Hourly Staff	11	11	12	18	18	12	12	12	12
Student Workers	19	19	20	30	30	30	30	30	30
Faculty FTE Full time	27	26	29	30	31	32	33	33	33
Faculty FTE Part time	22.9	19.1	26.9	31.56	24.9	23.9	22.9	22.9	22.9
Faculty Reassigned FTE Full time	5.14	4.34	4.54	4.44	4.54	4.54	4.54	4.54	4.54
Faculty Reassigned FTE Part time	.2	0.6	0.6	0.6	0.6	.06	.06	.06	.06
<b>Total Full Time Equivalent Staff</b>	<b>55.24</b>	<b>52.61</b>	<b>60.96</b>	<b>61.96</b>	<b>73.41</b>				

Identified is each category of position in the SMT division and total employee FTE:

Position	2018/19
Administration	2.0
Classified Staff FT	12.0
Classified Staff PT	-
Confidential Staff FT	-
Hourly Staff	18
Student Workers	30
Faculty FTE Full time	30
Faculty FTE Part time	24.9
Faculty Reassigned FTE Full time	3.91
Faculty Reassigned FTE Part time	0.6
<b>Total Full Time Equivalent Staff</b>	<b>73.41</b>

**Evidentiary Document**

[STEM Org Chart 5-18.pdf](#)

### III.A. Reflection: Considering Key Findings

Consider the previous analysis, identify unit strengths, challenges, opportunities, concerns, and areas in which further research is needed. Describe how the conclusions drawn can be used to improve the unit's effectiveness in order to promote student learning and achievement.

#### **Narrative**

There are a high number of students pursuing STEM educational pathways. This division provides educational support for 35% of the colleges FTES. Career technical education programs provide relevant training for successful employment. Many STEM disciplines continue to struggle with retention, success, and persistence through to completion of a degree or transfer. Discipline faculty would like to see these metrics as it relates to progression in the pathway and across disciplines as students need to Math and Chemistry as a component of almost every STEM major. This data can help identify where there are bottle necks in success for students in various transfer sequences and can help inform discussions for interventions and strategies.

The Math department has instituted multiple measures as a way to help students accelerate in their first level placement Math class. Data showing student preparation prior to their first course and retention, success, and persistence will be crucial in assessing where students are successful and continue to struggle in their progression. There are various strategies being instituted to support student success. These strategies include embedded tutoring, co-requisite instruction, and faculty professional development.

### **III.B. Reflection: Synergy**

Based on the CPRs/APPs for programs within the unit, identify any potential areas of synergy across unit and program activities that may not be easily recognized from within individual programs.

#### **Narrative**

There is synergy across the division regarding creation of a STEM center that would provide a central resource for students as they complete their pathway in a STEM major. The STEM center will bring together academic and student support services in a central area where students can easily access resources for success through their STEM pathway with special attention for those who are under-represented and under-prepared. Services and resources proposed are academic tutoring, counseling services, resource depository for STEM pathways and transfer, hub for internships and work based learning opportunities, as well as a place where students and staff can collaborate and build community and supportive connection. All this aimed at supporting successful academic completion, transfer, and/or industry placement opportunities.

A high fidelity health simulation lab has been launched in Spring 2018. Allied health students from all programs can directly benefit from simulated case studies through focused discipline and multidisciplinary scenarios. Allied Health faculty are currently receiving professional development that will support simulation teaching and learning.

A short term temp Program Services Coordinator is hired via the S-STEM NSF grant. The PSC (with supervision from S-STEM PI) will oversee the development and launch of this embedded tutoring program. The goal is to increase success for students in their transfer pathway courses.

Finally the SMT division has been awarded an NSF-HSI grant for 3.7 million dollars. It will support Engineering and Computer Science pathways and add staff to the budding STEM center. Staffing will include a retention specialist, an office assistant, an instructional aide, and instructional aides.

### III.C. Reflection: Aspirations

Describe the aspirations of the unit. What is the preferred future of the unit? What long-term results does the unit want to achieve? Strategically thinking about the next 2-5 years, how can resources be leveraged and programs work together to achieve those long-term results?

#### **Narrative**

Overall, many strategies are underway to support successful completion of student's educational goals. Over the past year, the SMT division and departments have implemented various strategies to improve success to achieve the college that 75% of students will meet their educational goals on time. This would include students who wish to enter the workforce, obtain an associate degree, and/or transfer. Institutionalized strategies will include:

- The STEM center in which academic and student support resources integrated and allow students a place in which they feel welcome and supported to meet their educational goals.
- Accelerated Math placement and improved success for students as they complete their mathematics pathways.
- Embedded tutoring programs and case management to aid in retention and success in their courses.
- Provide fully online Bachelor's Respiratory Care degree program fully online to provide access and success throughout the state.
- Continuing professional development that supports faculty in integrating active teaching and learning strategies that provide students will relevant hands on instruction.

#### **IV.A. Strategy for Unit Enhancement: Action Plan and Resource Requests**

Based on the reflection, develop an annual action plan with related resource requests. No narrative response will be entered in this section, but the objectives you create will be printed automatically in the ALUR report under this item.

(1) To begin, click on PLANNING at the top of the page, then CREATE A NEW OBJECTIVE. To view previously created objectives, click PLANNING at the top of the page, then VIEW MY OBJECTIVE.

(2) IMPORTANT! Make sure to associate each objective to this standard in the ALUR and link each objective to one or more institutional goals.

Need help? Contact the PRIE Office for further instructions.

#### **Narrative**

#### **Associated Objectives**

[651-Simulation Center Lab Technician](#)