Skyline COLLEGE

2019-20 Administrative Leadership Unit Review of Science, Technology, Engineering, and Mathematics Division

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, Technology, Engineering, and Math (STEM) 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, Technology, Engineering, and Math (STEM) division: Biology, Biotechnology, Chemistry, Earth Sciences (Environmental Science, Geology, Oceanography), Emergency Medical Care, Engineering & Computer Science, Health Sciences, Mathematics, Network Engineering Technologies and Electronics, Physics & Astronomy, Respiratory Care, and Surgical Careers (Anesthesia Technology, Central Services Technology, and Surgical Technology).

Included is the Bachelor of Science in Respiratory Care which provides students the seamless opportunity to continue upper division degree completion with having to transfer.

Engineering Tech Scholars, Biology & Chemistry Scholars, and First Year Experience (FYE) learning communities are also housed in the STEM division.

The division also supports the STEM center includes the MESA Center and FAB LAB. The STEM Center is serving as a model for the implementation of MetaMajors and Guided Pathways as a component of the College redesign.

I.C. Profile: Service Area Outcomes

List the current service area outcomes for the unit.

Narrative

1. Students served 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 who complete an AS in Respiratory Care have the ability to seamlessly complete a Baccalaureate in Respiratory Care without having to transfer to a 4 year institution.
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 and build a sense of community and belonging.
5. Students will have access to the STEM Center aimed to support the Science, Technology and Health metamajor in providing comprehensive academic and student support services.

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 Redesign:

- Continued establishment of the STEM center to support all students in declaring a STEM major. The HSI-DOE grant continues to support a STEM Counselor, STEM Retention Specialist, STEM Instructional Aide.
- The STEM center continues to increase drop in and embedded tutoring support for various discipline STEM courses through funding from MESA and the HSI-DOE grant. The goal is to increase retention and success. Success rates will be evaluated for the 20-21 year.
- STEM Division continues to collaborate with the Division of Strategic Partnership and Workforce Development to support marketing and recruitment strategies for CTE programs. The work is continuing to increase enrollment in lower enrolled programs such as Anesthesia Technology, Biotechnology and Networking Engineering. Dual enrollment in Biotechnology has significantly increased enrollment and created a pathway for the Skyline College program.
- Math faculty have completely realigned the math pathways to support the requirements of AB 705. Math pathways are fully aligned with college metamajors. Students are now guided through either the BSTEM (Business & STEM) or the SLAM (Statistics & Language Arts) pathways.
- The Math department has fully institutionalized linked co-requisite Math courses to offer in time instruction support to improve student learning outcomes (Math 190+890, Math 120+Math 820, Math 200+800, Math 130+830). Data gathering and analysis is currently underway.
- Faculty continue to engage in professional development regarding pedagogical practices with an equity minded framework to improve student success.
- The division graduated its third Bachelor's in Science in Respiratory Care cohort. This was the first fully online cohort.
- The Environmental Building opened in Fall 2019 providing opportunity for interdisciplinary (social and environmental sciences) and hands on education.

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 has significantly improved retention and success and has been granted full accreditation. Student support with the addition of a part time clinical coordinator, tutoring, and lab support has support improved outcomes. Anesthesia Technology was officially launched in Fall 2018 and has received initial approval for accreditation. The BS in Respiratory Care is also seeking accreditation status and has submitted a letter of intent.

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 careers 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 beginning Fall 2019 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 metamajors & guided pathways
- Continued increased student interest in STEM academic/career pathways
- AB 705 implementation for Math and English. Multiple Measures placement to transfer level mathematics, co-requisite model.
- S-STEM grant award - 3 year funding for STEM scholarships (expiring October 2019).
- 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
- Legislation allowing baccalaureate degree offerings at CA community colleges for Respiratory Care and Biomanufacturing

II.D. Analysis: Unit Personnel

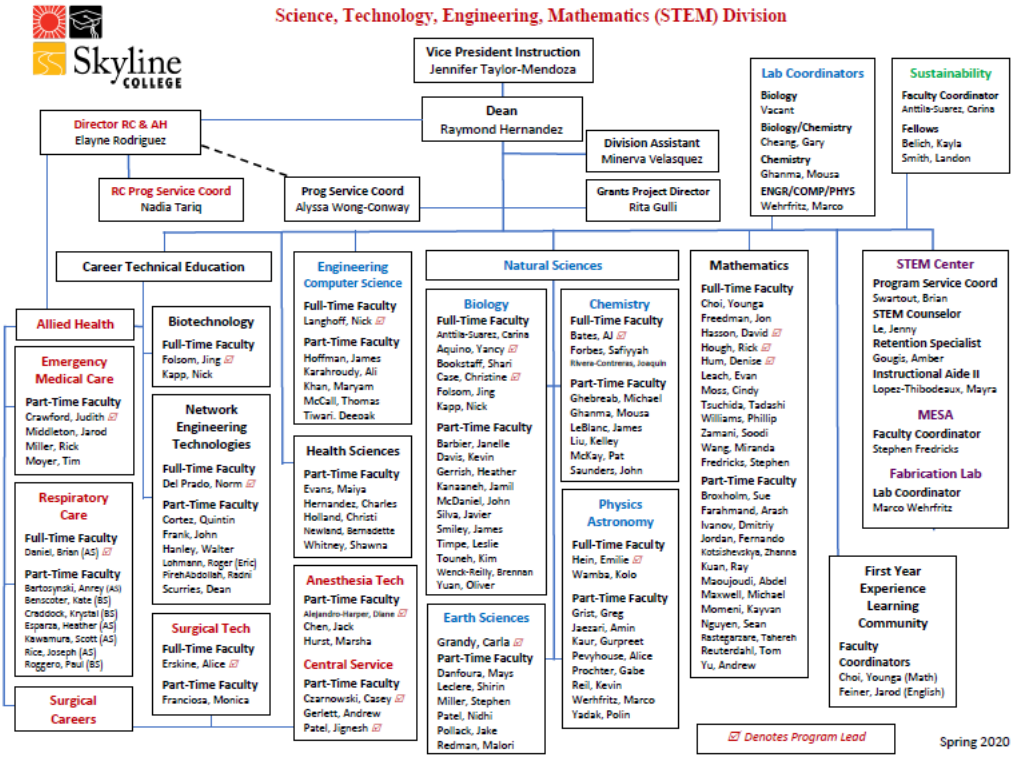
Describe the current staffing structure of the unit and how it aligns with achieving the purpose of the unit. Attach the current organizational chart (an image of the org chart can be inserted in the box). Provide staffing FTE by category (FT/PT faculty, permanent staff, temporary staff, student workers,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



Skyline COLLEGE

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

Administration:	
Dean	Carla Grandy / Raymond Hernandez
Academic Supervisor – Allied Health, Respiratory Care	Elayne Rodriguez
Classified Staff:	
Administrative Assistant	Minerva Velasquez
Program Services Coordinator (SMT)	Alyssa Wong-Conway
Program Services Coordinator (STEM Center)	Bryan Swartout
Program Services Coordinator (RPTH)	Nadia Tariq
Lab Tech (Biology)	Open
Lab Tech (Chemistry)	Mousa Ghanma
Lab Tech (Biol/Chem)	Gary Cheang
Lab Tech (FAB LAB)	Marco Wehrfritz
Instructional Aide II (grant funded)	Mayra Lopez-Thibodeaux
Retention Specialist (grant funded)	Amber Gougis
Hourly Staff: Short Term	
(1) BIOL Instr Aide II	Biology lab instructional support
(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) Allied Health Instruct Aide II Tutor	Tutoring to support successful completion
(2-3) STEM Center Instructional Aide II Tutors	Tutoring to support successful completion
Student workers:	
(2) Biology - Federal Work Study	Assist with lab stockroom and lab preparation
(1) Biology – General Fund 1 TA	Assist with lab preparation
(2) Chemistry – Federal Work Study	Assist with lab stockroom and lab preparation
(20) MESA / HSI Grant –Tutors	Provide peer tutoring support (MESA HSI grant funded)
(1) Physics – General Fund 1 TA	Assist with lab stockroom and lab preparation
(1) NETX – General Fund 1 TA	Assist with lab support in instructional network labs
FT - Faculty Reassigned Time:	
Biotech Coordination	Coordination of Biotech program
Engineering Coordination	Coordination of Engineering, Computer Science, and FAB LAB
First Year Experience (FYE) Coord	Coordination of FYE learning community
GEOL Program Coordination	Coordination of Earth Science program/restructure
Math Department Coordination	Coordination of Math meetings and discipline focused work
Math TRiO Coordination	Coordination of Math TRiO component of program (TRiO grant)
MESA Coordination	Coordination of MESA program (Fund 1)
NETX Coordination	Coordination of NETX program (Strong Workforce funds)

RPTH BSRC Coordination	Coordination of BSRC program
SURG Coordination	Coordination of SURG program
Sustainable Initiative Coordination	Coordination of sustainable initiative activities
Engineering Tech Scholars Coordination	Coordination of MATH/ETS program
PT – Faculty Reassigned Time:	
ANST Coordination	Coordination-various programmatic/accreditation responsibilities
EMC Coordination	Coordination-various programmatic/accreditation responsibilities
SURG Clinical Coordination	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				
	2016/ 17	2017/ 18	2018/ 19	2019/ 20	2020/ 21	21/2 2	2022/ 23	2023/ 24	2024/ 25
Administration	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Classified Staff FT	7.0	8.0	10.0	12.0	12.0	12.0	12.0	12.0	12.0
Classified Staff PT	-	-	-	-	-	-	-		
Confidential Staff FT	-	-	-	-	-	-	-		
Hourly Staff	12	18	18	18	18	18	12	12	12
Student Workers	20	25	27	30	30	30	30	30	30
Faculty FTE Full time	29	30	31	28	30	32	32	32	32
Faculty FTE Part time	26.9	31.56	32	32	24.9	23.9	22.9	22.9	22.9
Faculty Reassigned FTE Full time	4.54	4.44	4.54	3.37	3.37	3.37	3.37	3.37	3.37

Faculty Reassigned FTE Part time	0.6	0.6	0.6	0.6	0.6	.06	.06	.06	.06
Total Full Time Equivalent Staff									

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

Position	2019/20
Administration	2.0
Classified Staff FT	12
Classified Staff PT	-
Confidential Staff FT	-
Hourly Staff	18
Student Workers	30
Faculty FTE Full time	28
Faculty FTE Part time	32
Faculty Reassigned FTE Full time	3.37
Faculty Reassigned FTE Part time	0.6
Total Full Time Equivalent Staff	77.43

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, Physics, 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, Counseling, Learning Center, and Assessment Center have worked collaboratively to institute many strategies to help students accelerate in their first level placement Math class and throughout the sequence. Strategies include embedded tutoring, co-requisite instruction, and faculty professional development. Data showing student preparation prior to their first course and retention, success, and persistence continues to be crucial and needed in assessing where students are successful and continue to struggle in their progression.

Career technical education continues to current and relevant in addressing local workforce preparation needs. Faculty continually evaluate program curriculum and modify to meet industry skills and abilities. Health care programs meet accreditation requirements and the majority of graduates successfully complete credentialing and licensing requirements and gain employment within months after program completion. The division has implemented a high fidelity simulation lab to provide simulated patient care experience. Because equipment is highly technical and sophisticated, a new for a full time lab technician has been identified. The position can effectively support administration of the center, support faculty in developing and integrating simulation in instruction, and be leveraged to provide lab support for Emergency Medical Care, Respiratory Care, and Surgical Careers.

Biotechnology has partnered to scale dual enrollment with local high schools. Network Engineering continues to support IT training which continues to be in high demand.

The STEM division is partnering with the Strategic Partnerships/Workforce Development and MCPR to promote student recruitment and increase industry partnership.

As we move towards fully implementing Meta Majors and Guided Pathways, working to identify STEM courses that act as barriers for students from other Meta Majors (Kinesiology, Psychology, etc.) and developing supports for students to be successful will be a focus of the work in the Division.

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

With the opening of the STEM Center in Fall 2019, the division has a central resource for students as they complete their pathway in a STEM major. The STEM center houses the Science, Technology and Health metamajor and brings together academic and student support services in a central area where students can easily access resources for success through their STEM pathways 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. With the implementation of Meta Majors and Guided Pathways as well as Student Success Teams, the STEM Division is poised to serve as a model for what these structures and supports can look like as many of them are already in place within the STEM Center.

The opening of the Environmental Science Building provides additional opportunities for Synergy centered around sustainability. With Earth Science as well as Social Science courses being offered within the Environmental Science Building, there are new opportunities for collaboration across disciplines in support of Environmental Education and Sustainability. In addition, there is the opportunity to leverage existing programs such as Energize Colleges Internships and the GE Thematic Pathway in Sustainability which bring together students and faculty from disciplines across campus through the framework of sustainability.

A high fidelity health simulation lab has been launched. Allied health students from all programs can directly benefit from simulated case studies through focused discipline and multidisciplinary scenarios. Allied Health faculty continue to receive professional development that will support simulation teaching and learning. Classified lab and instructional support has been requested by health care programs. A full time lab tech can support administration of the simulation lab, provide faculty support in development and integration of patient care simulation, as well as be leveraged to provide lab resource support for Emergency Medical Care, Respiratory Care, and Surgical Careers.

The STEM division continues to administrate a DOE-HSI grant 3.7 million dollars. It continues to support Engineering and Computer Science pathways and add staff to the STEM center. Staffing include a STEM counselor, a retention specialist, and an instructional aide. Two NSF-ATE grants in Biotechnology and

Engineering Technology will support development and enhancement of these programs.

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 and continue to support various strategies to improve success and to achieve the college goal of 75% of students meeting 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:

- Continue to develop out and implement programmatic strategies for the STEM center supporting the Science, Technology, and Health metamajor in which academic and student support resources are 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. This includes a realignment of the Math pathways supporting the BSTEM and SLAM metamajor needs (done), the integration of co-requisite instruction.
- Embedded tutoring programs and case management to aid in retention and success in their courses.
- Identify personnel support for Allied Health Simulation Lab and Allied Health programs to provide administrative oversight of the sim lab, support development and integration of patient care skills simulations, and be leveraged to support equipment and supplies maintenance for the Emergency Medical Care, Respiratory Care, and Surgical Careers programs.
- Continuing professional development that supports faculty in integrating active teaching and learning strategies that provide students will relevant hands on instruction with an equity minded framework.
- Carry out and implement strategies identified in the two new NSF-ATE grants SkyBay Tech (Engineering Technology) & BioSCOPE (Biotechnology) to support CTE pathways.
- Identifying and implementing strategies that support inclusion and success for HSI and AANAPISI students

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