



## Administrative Leadership Unit Review (ALUR) Template for FY 2021-22

**Date:** 3/1/2022

**Division:** STEM

**Division Dean/VP:** Grandy

**Program(s) within your division:** STEM Disciplines, Allied Health Disciplines, STEM Center, Sustainability

### **I. List the programs that fall within your Division.**

- Simulation Lab
- Allied Health
- Anesthesia Technology
- Biology
- Biotechnology
- Central Services Technology
- Chemistry
- Computer Science
- Earth Sciences (Geology/Environmental Science/Oceanography)
- Emergency Medical Technology
- Engineering
- Electronics Technology
- Health Science
- Mathematics
- Network Engineering
- Natural Science
- Physics
- Respiratory Care (Associates + Bachelors)
- Surgical Technology
- STEM Center
- Fabrication Lab
- Electronics Lab
- Learning Communities: Engineering Tech Scholars, Biology Chemistry Scholars, Data Science Pathway, First Year Experience
- Sustainability – Energize Colleges/Blitz/Sustainability Pathways

### **II. Briefly describe any major changes to the Division or Programs' purview and functions during the past year.**

## Administrative Leadership Unit Review (ALUR) Template for FY 2022-23

- a. During the pandemic, tutoring services moved online and we found that students were able to access more easily than previously. Now that we have returned to campus, we are working to offer both in-person and virtual support to students in STEM pathways. Students who are taking classes on campus are still access virtual supports which provides more flexibility for students who work or have other responsibilities outside of school. While it has been great to be able to support more students, it is also taxing on our staff to provide support in two different modalities and the increased tutoring traffic is demanding more support from IAs and tutors.
- b. Limited availability of clinical placement sites for Allied Health Programs has continued throughout the pandemic. With the advent of omicron variant of COVID-19, hospitals once again began to limit access to students and faculty. As a result, we have increased use of the simulation lab and students have been delayed in completing their programs.
- c. Loss of short-term temporary job classification has limited the services that we are able to provide student, especially in Allied Health and higher-level STEM classes.
- d. MESA funds have been restored and our MESA Center is undergoing a big “return to campus” push to recruit students and offer all of the components of the MESA program. New MESA Directors – Emilie Hein and Jing Folsom – have been hosting events and open houses to recruit students to MESA.
- e. As we move through the funding cycles of the various grants held in the Division, goals and objectives changes so we are working to ensure that we are consistently meeting those. In addition, we have applied for a new grant, NSF S-STEM, and will use that to implement student scholarships and a 3-tiered mentoring program for students in transfer related STEM fields.
- f. We have experienced much turnover in the STEM Center as staff become concerned about the funding expiring for their positions. This has created a stressful work environment for the remaining staff as well as reduced services for students.

### III. Briefly describe the major challenges and achievements for your Division over the past year.

#### Challenges in the STEM Division:

- a. The STEM Division has relied on short term temporary positions for many years to provide tutoring, embedded support, lab coordination, and tutoring for the various programs within the STEM Division – particularly those where a current Skyline College student will not be able to provide support, such as specialized Allied Health programs and higher-level STEM Classes. These positions are usually filled by recent graduates or graduate students who are only available to work for a few hours per week. We have been informed that moving forward, CSEA will not support these positions, so we must work to create permanent positions, which will create hiring challenges.
- b. The STEM Center Team did a great job of transferring academic support as well as community building opportunities online, and now we are working to recreate the STEM Center sense of community back to the in-person environment. During the pandemic students became accustomed to receiving tutoring online and now are reliant on the flexibility of that service. We are working to support students in both modalities, but (especially with the challenges outlined above) it is difficult to provide the level of support to meet student demand.

## Administrative Leadership Unit Review (ALUR) Template for FY 2022-23

- c. Due to the pandemic, many hospitals cancelled or postponed clinical placements for students and did not allow instructors into hospitals to assess student competencies. This affected: Respiratory Care, Surgical Technology, Emergency Medical Care, and Anesthesia Technology. At this point most hospitals and programs have resumed clinical placements, but some at reduced capacity, which has created a backlog of students who have not been able to complete their clinicals and thus their degree or certificate requirements.
- d. STEM Division made a push to return to a largely in-person schedule for the 21-22 academic year while more of the STEM classes at our sister colleges remained online. As a result, we have experienced a greater decline in enrollment (and subsequent decline in morale). We are working now to find a balance between student demand and pedagogical best practices for the various STEM disciplines.
- e. We continue to move towards full implementation of AB705 and the reduction/elimination of below transfer level classes. This is a challenge for both our Math Faculty as well as our students from South San Francisco High School District where Intermediate Algebra is not a graduation requirement and thus those high school students are not prepared for entry into the transfer level STEM math pathway. We are working to resolve this issue through supplemental instruction students and professional development for faculty.
- f. The disproportionally large size of the STEM Division is one of the great challenges as the same resources (in terms of administrative and classified professional support) are stretched across many more students, faculty, sections, and programs. This creates inequities in workload for the Dean and Division Assistant and inequities in support for faculty and students.

### Achievements in the STEM Division:

- Transfer Sciences are utilizing what they have learned during the pandemic to better serve students. Some disciplines (ENGR, PHYS) have created lab kits that they can continue to use for at home labs or developed labs that can be completed with household items and are thus able to offer virtual labs. (Virtual STEM labs have always been an impediment to a fully online option for students to meet their GE requirements.) Other disciplines, such as CHEM have developed a hybrid format to better utilize space and time in the classroom.
- As hospitals have limited the number of students in clinical placements, the Allied Health Programs have increased the use of our Simulation Lab on campus. This has been a great utilization of our resources and has also renewed the urgency for a full-time Laboratory Coordinator for the Simulation Lab in addition to highlighting the need for institutionalize funding of the Simulation Lab equipment, which was purchased with one time funds for the BSRC Program.
- STEM Division faculty have won more than \$6.5 million in external funds for various programs to promote STEM education and to increase equitable outcomes and diversity in STEM. Progress on grant projects this year:
  - **Pathways to Improved Representation in Nuclear Physics** -- Skyline College Physics has received a \$435,294 grant from the US Dept of Energy to fund this

## Administrative Leadership Unit Review (ALUR) Template for FY 2022-23

program for 2 years, and the first cohort of students trainees started on July 1, 2021. With this grant, Dr. Kolo Wamba and Dr. Emilie Hein have initiated a rigorous student traineeship program that is the first of its kind in our District. One of its stated aims is to broaden and diversify the field of nuclear physics, which is achieved by recruiting students from communities not traditionally represented in nuclear physics and mentoring them through individual small-scale research projects in support of the [nEXO nuclear physics experiment](#). Mentors and trainees participated and presented at multiple conferences, including:

- Low Energy Community Meeting 2021 - Inclusive Excellence Workshop
  - APS DNP – Next Generation Nuclear Workforce Symposium
  - SACNAS – where trainee, Brendan Murtagh, received an award for his poster presentation.
- **BioScope ATE NSF** Grant (PI – Dr. Nick Kapp) has continued throughout the pandemic with grant partners and biotechnology students creating biotechnology supplies for local K-12 institutions that would not otherwise be able to engage in hands-on labs.
- **NSF ATE SkyBayTech** -- Creation of new Electronics Lab (paid through a combination of grant funds and capital improvement funds) and Electronics Technology Pathway in partnership with Strategic Partnership and Workforce Development Division in an effort to strengthen both dual enrollment offerings and pathway to Skyline College for local area high school students. Faculty (Nick Langhoff and Brooks McCall) have gone through the certification process and will begin to offer certifications at Skyline. In addition, we are working closely with Lawrence Livermore National Labs (through support of SPWD Division) to create a pathway for graduates of our Electronics Technology Program.
- **Data Science Pathways** (PI: Denise Hum) -- Passion Driven Statistics has been implemented in MATH 200 classes and math faculty have been trained to incorporate PDS into their classes. This project aims to serve to increase the number and diversity of STEM students. To do so, it will establish a new path into STEM majors and careers through statistics and data science for students at a Hispanic-serving two-year college. This new path is expected to improve STEM learning and teaching and increase the diversity of students pursuing STEM. This project may serve as a model for other community colleges looking to build a data science program and a new pathway into STEM.
- **Innovative and Meaningful Mentoring to Enhance Retention, Success and Engagement in STEM (IMMERSE in STEM)** – New proposal submitted to the NSF S-STEM Program. If successful, the grant will (1) increase the number of low-income, academically talented students in STEM disciplines who attain a STEM related associate degree or transfer to four-year universities to pursue STEM related baccalaureate degrees; (2) develop an innovative mentoring program combining existing campus resources, as well as evidence-based methodologies to train mentors and create a cohesive multi-layer mentorship of peers, faculty and industry contributors; (3) study and report on the results of the program.
- **Department of Education, Title V, HSI STEM Grant** – Grant continues to support STEM Retention Specialist, IAII, and STEM Center Counselor as well as PIs and

## Administrative Leadership Unit Review (ALUR) Template for FY 2022-23

tutors in the STEM Center. In addition, Winter Scholars Program resumed this year and expanded to offer a winter research opportunity to 25 students.

- STEM Division has 65 paid internship/traineeships that have been funded and filled during the last year:

Grant	# of Positions	Position Description
SkyBayTech	14	Students Complete Certificate of Specialization in Electronics Assembly and Fabrication
Teagle Internships	4	Engineering students complete hands-on lab project for ENGR 100 students.
STEM Research Scholars	25	Students engage in paid research focused program to prepare them for scientific research.
NSF ATE Grant	9	Students manage biotech manufacturing club to gain skills in facilitation as well as biotechnology laboratory procedures.
ENERGIZE Colleges	5	Students facilitate sustainability and energy saving projects on campus and in the community.
Department of Energy	8	Students work with Skyline Fabrication Lab and then intern at SLAC and Stanford Labs.

- In partnership with Predicine a local BioPharma company, the Biomanufacturing club has created over 2,700 COVID sampling bags. These kits are assembled in a clean/aseptic manner in the biotechnology (BTEC) lab in Building 7. Thirteen student volunteers (led by faculty Dr. Jing Folsom and Dr. Nick Kapp) sanitized the working benchtop, wore a lab coat and gloves to ensure the quality and cleanliness of our products. Each of the sampling kits contained a barcoded robotic sample tube, a sterile swab and a chart barcode that matches the robotic sample tube. The samples are set up so that a robot can process the sample making it possible for a company to quickly process thousands of samples. However, each sample must start out with a kit that is assembled by hand. These kits are distributed to first responders as well as to local area schools to reduce the cost and increase the availability of COVID testing.
- Successful implementation of PHYS, CHEM, and MATH Jams for each semester and MATH and CHEM for Summer Session as a 1-week intensive preparation for students entering MATH, Chemistry, or Physics series to build confidence and fundamental skills necessary to succeed in class. We are currently working on reformatting the MATH Jam to better meet student needs and increase enrollment.

## Administrative Leadership Unit Review (ALUR) Template for FY 2022-23

- Sustainability initiatives expanded through 5 additional internships, 15+ additional sustainability focused lessons developed across campus, and 6 additional classes across the college contextualized to the theme of sustainability as part of the GE thematic pathway in Sustainability.
- The STEM Center and Science, Technology, and Health Student Success Team hosted a STEM Center Open House in December in which we invited students from across campus to visit and learn about the various STEM spaces. This was a very successful event and student and faculty/staff participants enjoyed the opportunity to engage on campus. Additionally, [Science in Action](#) has continued to run weekly throughout the pandemic and has stayed virtual this semester, allowing a broader participation of both speakers and student/faculty/staff participation. Science in Action is an opportunity for our students to learn about and ask question of recent STEM graduates as well as more senior scientists. We specifically recruit speakers from underrepresented groups in STEM and community college backgrounds so that students are able to see a variety of paths to STEM careers.
- Accreditation achieved for all of the Allied Health Programs including new accreditation of the BSRC Program.

#### IV. List and describe the major goals for your Division – What will the Division focus on achieving over the next 1-3 years? How do your Division goals align with the College’s [M-V-V](#) and [Education Master Plan](#)?

1. Fully implement the STEM Center Model and Student Success Team Model within the STEM Center, including institutionalizing STEM Center roles and academic support opportunities within the STEM Center. (Values: Campus Climate, Open Access, Student Success and Equity, Academic Excellence, Community Partnerships | Ed Master Plan: Strategic Goals 1, 2, 3).
2. Refine Math placement procedures and Math course offerings to become fully compliant with AB705 and ensure equitable outcomes for all students completing their Math course at Skyline College. (Values: Social Justice, Open Access, Student Success and Equity, Academic Excellence | Ed Master Plan: Strategic Goals 1, 2).
3. Continue to recruit and offer high quality Allied Health Programs that lead students immediately into living wage careers within the Bay Area and work closely with hospitals to ensure that students are gaining the skills necessary to be successful health care professionals. (Values: Student Success and Equity, Academic Excellence, Community Partnerships | Ed Master Plan: Strategic Goals 2, 3, 5, 6).
4. Fully implement the grant goals for grants currently held within STEM Division and continue to seek additional grant funding to support student success and engagement in STEM in an effort to meet workforce demand in the Bay Area and create opportunities for students to gain work experience, thereby opening opportunities for them. (Values: Social Justice, Student Success and Equity, Academic Excellence | Ed Master Plan: Strategic Goals 1, 2).
5. Update lab equipment to continue to offer high-quality, state of the art lab experiences with modern lab equipment and curriculum for all students in transfer and Allied Health related STEM lab classes. (Values: Student Success and Equity, Academic Excellence | Ed Master Plan: Strategic Goals 2, 3).
6. Institutionalize and connect the sustainability work, such as Energize Colleges, Blitz, campus as a living lab, Sustainability GE Pathway, etc. and build additional community partnerships



## Administrative Leadership Unit Review (ALUR) Template for FY 2022-23

and sustainability pathway to high schools. (Values: Social Justice, Student Success and Equity, Academic Excellence, Community Partnerships, Sustainability | Ed Master Plan: Strategic Goals 1, 2, 3, 5).

- V. Using the boxes below, list the resource requests that the Division is moving forward for consideration. Please note that the resource requests should be in declining order of priority, as indicated in the upper left corner of each box. For each resource request, describe how it connects with your Division goals, and the potential consequences of not securing the requested resource. In sum, please explain why filling this request should be a priority for the College.

Order of Priority	Resource Request Title	Type	Program(s) Impacted	Amount \$
1	STEM Center Retention Specialist	Classified Professional FTE	STEM Center, STEM + Allied Health Disciplines	\$94,604
<p><b>Describe how this request impacts program/division operations, and how it will further completion of the Division goals stated above.</b></p> <p>This request supports the division to meet grant goals for HSI STEM Grant, allows us to provide high level support for AB705 implementation, and ensures that we are fully implementing the STEM Center model and Student Success Team. (Goals 1, 2, 5)</p>				

Order of Priority	Resource Request Title	Type	Program(s) Impacted	Amount \$
2	STEM Center Instructional Aide II	Classified Professional FTE	STEM Center, STEM + Allied Health Disciplines	\$94,604
<p><b>Describe how this request impacts program/division operations, and how it will further completion of the Division goals stated above.</b></p>				



## Administrative Leadership Unit Review (ALUR) Template for FY 2022-23

This request supports the division to meet grant goals for HSI STEM Grant, allows us to provide high level support for AB705 implementation, and ensures that we are fully implementing the STEM Center model and Student Success Team. (Goals 1, 2, 5)

Order of Priority	Resource Request Title	Type	Program(s) Impacted	Amount \$
3	STEM Center Instructional Aide II	Classified Professional FTE	STEM Center, STEM + Allied Health Disciplines	\$94,604

**Describe how this request impacts program/division operations, and how it will further completion of the Division goals stated above.**

This request supports the division to meet grant goals for HSI STEM Grant, allows us to provide high level support for AB705 implementation, and ensures that we are fully implementing the STEM Center model and Student Success Team. This position is specifically to replace the short term temporary positions that will no longer be approved. (Goals 1, 2, 5)

Order of Priority	Resource Request Title	Type	Program(s) Impacted	Amount \$
4	STEM Center Counselor	Faculty/ Adjunct FTE	STEM Center, STEM + Allied Health Disciplines	\$106,725

**Describe how this request impacts program/division operations, and how it will further completion of the Division goals stated above.**

This request supports the division to meet grant goals for HSI STEM Grant, allows us to provide high level support for AB705 implementation, and ensures that we are fully implementing the STEM Center model and Student Success Team. Additionally, the STEM Center Counselor supports many of the Allied Health Programs ensuring that they are meeting their requirements to be able to graduate and begin their careers in health care. (Goals 1, 2, 3, 5)





### Administrative Leadership Unit Review (ALUR) Template for FY 2022-23

Order of Priority	Resource Request Title	Type	Program(s) Impacted	Amount \$
5	Simulation Lab Coordinator	Classified Professional FTE	Allied Health Programs	\$94,604
<p><b>Describe how this request impacts program/division operations, and how it will further completion of the Division goals stated above.</b></p> <p>This request ensures that we are meeting the needs of Allied Health students by having a trained person to ensure they have the skills needed to be successful in hospital setting, especially when clinical placements are limited. Additionally, this role ensures that the equipment that we have is maintained and kept up to date so that we are offering high quality lab experiences. This position would specifically support the short term temporary positions in Allied Health that will no longer be approved. (Goals 3,5)</p>				

Order of Priority	Resource Request Title	Type	Program(s) Impacted	Amount \$
5	BIOL/CHEM Lab Equipment Upgrade	Equipment	CHEM BIOL GEOL OCEN ENVS	\$160,000
<p><b>Describe how this request impacts program/division operations, and how it will further completion of the Division goals stated above.</b></p> <p>As much of the lab equipment has aged, we are not able to offer the high-quality lab experience that students need to be successful when they transfer or move into the workforce. Updating equipment would ensure that they are working on modern equipment and learning modern techniques. (Goal 4. 5)</p>				

Order of Priority	Resource Request Title	Type	Program(s) Impacted	Amount \$
6	Sustainability Coordinator	Faculty/ Adjunct FTE	Interdisciplinary – STEM + other transfer areas,	\$94,604



### Administrative Leadership Unit Review (ALUR) Template for FY 2022-23

			SESP, SPWD, etc.	
<b>Describe how this request impacts program/division operations, and how it will further completion of the Division goals stated above.</b>				
A permanent sustainability coordinator would allow the long-term connection of all of the sustainability work on campus. It would also allow expansion of some of our efforts which would allow more real-world experiences for students in the growing field of sustainability. (Goal 6)				

If you have additional resource requests, please copy and paste new boxes below, and be sure to update the priority ranking.