



Administrative Leadership Unit Review (ALUR) Template for FY 2023-24

Date: 3/6/2023

Division: STEM

Division Dean: Folsom

Please respond to the following prompts by clicking on the grey box:

I. List the programs that fall within your Division.

- Allied Health
 - Central Services Technology
 - Emergency Medical Technology
 - Respiratory Care (Associates + Bachelors)
 - Surgical Technology
 - Anesthesia Technology (Not Active)

- Biology
- Biotechnology
- Chemistry
- Computer Science
- Earth Sciences (Geology/Environmental Science/Oceanography)
- Engineering
- Electronics Technology
- Health Science
- Mathematics
- Network Engineering
- Natural Science
- Physics
- STEM Center
- Learning Communities: Engineering Tech Scholars, Biology Chemistry Scholars, Data Science Pathway, First Year Experience
- Sustainability – Energize Colleges

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

- a. One of the major changes to the Division was Dean Dr. Grandy transitioned to CSM as Interim VPI and Dr. Folsom took on as Acting Dean of STEM Division.
- b. Loss of Director of Allied Health during Summer and Fall 22 and hired a new Director Heather Esparza on Spring 23.
- c. Loss of Full-time faculty in Surgical Tech program (Alice Erskine due to retirement) has limited our service to students. The program was on hold for a year (Summer 22, Fall 22 and Spring 22, no new students). Hired two new full-time surgical tech faculty. A new student cohort starts Summer 23.
- d. Loss of a Program Service Coordinator has limited the general functions of the Division and programs, especially for Surgical Technology and Central Service Technology.

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- e. Loss of Retention Specialist has limited the services that we are able to provide student, especially for BCS and ETS students. A new retention specialist is hired and will start on April 10, 2023.
 - f. Anesthesia Technology Program has lost its accreditation due to the inactive communication between Program Director/coordinator and previous Director of Allied Health during Spring 2022. This program is not active, no students is in this program so far. The plan is to get the accreditation again soon.
 - g. Denise Hum is the new MESA Co-Director, replacing Jing Folsom to continue the support to MESA students.
 - h. We were awarded NSF-S-STEM grant to support students pursuing STEM career pathway. Rick Hough is replacing Jing Folsom as co-PI in this grant.
- III. Review the Improvement Platform’s “General Information Summary” dashboard for program review completion and **note which programs within your division are (a) missing a CPR/PRU for their designated year, and are (b) scheduled for a CPR and/or PRU next year.**
- (a) missing a CPR/PRU for their designated year:**
- (b) scheduled for a CPR and/or PRU next year:**
- CRP:** Chemistry and Network Engineering Technology
PRU: Biotechnology, Mathematics
- IV. Review the Improvement Platform’s “Course SLO/ PSLO Assessment” dashboard for your division and **note progress on course SLO assessment (for instructional/ student service programs with courses) or program SLO assessment (for student services programs) for the current three-year cycle? Which programs may need your support, and how will you support them?**
- They won’t be marked as complete until the final draft is submitted and signatures are gathered.
- V. **Briefly describe the major challenges and achievements for your Division over the past year.**
- Challenges in the STEM Division:**
- a. STEM Center is back to serve students on campus with tutor support, study space and more. With more in person classes, active student clubs’ activities and more workshops, the limited space can’t meet the needs of STEM students.
 - b. With the HSI-DOE grant, we have been supporting the tutoring services, offering both in-person (mainly Spring 23) and virtual support to students in STEM pathways for the last five years. However, this grant will end Sep 30, 2023 with a possible extension to Mar 31, 2024. Institutionalized the tutoring service to support STEM students is urgent.
 - c. Allied Health Programs’ challenges:

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1. Without Director of Allied Health for Summer and Fall 2022 to oversee the programs, there was little to no progress on the comprehensive program review process for Fall 2022. Now Heather is leading the team to complete the CPR.
 2. Surgical Technology was on hold for a year, new faculty were on board, with the transition, the communication among program, students and clinical sites was less ideal.
 3. At this point most hospitals and programs have resumed clinical placements for Respiratory Care, Surgical Technology, Emergency Medical Care, and Central Services Technology. 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.
 4. Anesthesia Technology, without accreditation, the program is not active. Heather, Allied health Director, will work with full time faculty to re-apply. Also, for this program, hiring qualified adjunct faculty is essential to sustain the program.
- d. For 22-23 academic year, overall enrollment increased in STEM Division and online, asynchronous classes are preferred by students in almost all disciplines. We are working 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:

- Most of the transfer sciences have transitioned back to fully in person lab to maximize students' hands on experience. Some courses in PHYS, continue using at home lab kits to offer virtual labs; some courses in Biology and Environmental Science, continue integrating virtual STEM labs to meet students' GE requirements. Other disciplines, such as CHEM have developed a hybrid format to better utilize space and time in the classroom.
- We're continue using the Simulation Lab on campus to meet student needs. A part-time permanent Laboratory Coordinator for the Simulation Lab will be hired to enhance the program learning outcomes.

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- STEM Division has updated several instructional equipment in various disciplines, such as Biology/Biotechnology, Chemistry, Respiratory Care, Emergency Medical Technology, Engineering and Mathematics.
- STEM Division faculty have won more than \$7.5 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:
 - **Innovative & Meaningful Mentoring to Enhance Retention, Success, & Engagement in STEM (IMMERSE)**, Skyline College has awarded a \$1, 498,855 grant from National Science Foundation (NSF) to focuses on enabling academically talented, financially disadvantaged students to transfer to a four-year university to earn a degree in STEM pathway. Students will be supported by scholarships (up to \$10,000 per year, for 3 possible years), multi-tiered mentorship, workshops and internships. The first cohort, 10 scholars have been awarded. All scholars have been paired with a faculty mentor.
 - **Pathways to Improved Representation in Nuclear Physics** -- Skyline College Physics has received this grant from the US Dept of Energy to fund this program for 2 years, and the first cohort of student trainees has completed. With this grant, Dr. Kolo Wamba and Dr. Emilie Hein have recruited students from communities not traditionally represented in nuclear physics and mentored them through individual small-scale research projects in support of the nEXO nuclear physics experiment. Mentors and trainees participated and presented at multiple conferences. Due to the success of this grant, DOE has invited Physics to apply for grant extension during summer 23 and the renewal of this two-year grant for another two years starting Sep 1, 2023.
 - **BioScope ATE NSF Grant** (PI – Dr. Nick Kapp) has continued with BABEC, Laney College and biotechnology students creating biotechnology supplies for local K-12 institutions that would not otherwise be able to engage in hands-on labs. This grant will expire on June 30, 2023 with a possible non-cost extension for a year.
 - **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 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. We also hired a coordinator to connect our program with local industry using the grant.
 - **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

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serve as a model for other community colleges looking to build a data science program and a new pathway into STEM.

- **Department of Education, Title V, HSI STEM Grant** – Grant continues to support STEM Retention Specialist, IAll, and STEM Center Counselor as well as PIs and tutors in the STEM Center. In addition, Winter Scholars Program continued this year and expanded to offer a winter research opportunity to 25 students. This grant will end on Sep 30, 2023 with a possible six month extension to Mar 31, 2024.
- STEM Division has 64 paid internship/traineeships that have been funded and filled during the last year. The table also includes Faculty (PI/Co-PI) workload.

Grant	# of Positions	Position Description	Faculty
SkyBayTech	14	Students Complete Certificate of Specialization in Electronics Assembly and Fabrication	Nick Langhoff- Faculty Coordinator @ 20% FTE, Summer OVL -Non-instructional Laura Tudor – Adjunct Faculty, non-instructional
Teagle Internships	4	Engineering students complete hands-on lab project for ENGR 100 students.	Nick Langhoff Faculty Coordinator Remaining funds for this sub-grant is for student payroll
STEM Research Scholars	25	Students engage in paid research focused program to prepare them for scientific research.	Susanne Schubert-Faculty Coordinator (OVL-non-instructional) Marco Wehrfritz as Adjunct Faculty, non-instructional
NSF ATE Grant	9	Students manage biotech manufacturing club to gain skills in facilitation as well as biotechnology laboratory procedures.	Nick Kapp – Faculty Coordinator @9% FTE, Summer OVL – non-instructional
ENERGIZE Colleges	4	Students facilitate sustainability and energy saving projects on campus and in the community.	Carina as Internship Coordinator (OVL-non-instructional*) for intern Teresa Gulli Michael Song as Internship Coordinator (OVL-non-



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			instructional*) for intern Jaden Wedlake *OVL Timesheets paid out of Carina's PIF grant
Department of Energy	8	Students work with Skyline Fabrication Lab and then intern at SLAC and Stanford Labs.	Kolo Wamba as PI at 20% FTE, Summer OVL – non-instructional Emilie Hein as Co-PI at 20% FTE Summer OVL – non-instructional

- 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.
- Sustainability initiatives takes 4 internships this semester, two of STEM Faculty accepted our own students as interns to explore sustainability in different fields.
- MESA center has supported three counselors with close to 500 additional hours to support STEM/MESA students in STEM Division since Aug 17, 2022.
- The STEM Center has been experiencing a strong coming back in person needs of the tutor service and study space. There have been over 4,000 student visits since Jan 17, 2023.
- Science in Action has continued to run weekly throughout last semester and this semester with options of in person or via zoom, 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.

VI. 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).



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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. Work with SPWD to build community partnerships and sustainability pathway from high schools to Skyline College STEM field. (Values: Social Justice, Student Success and Equity, Academic Excellence, Community Partnerships, Sustainability | Ed Master Plan: Strategic Goals 1, 2, 3, 5).

VII. **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.** (To see a list of requests submitted by your programs, please follow the separate instructions for downloading from the Nuventive Platform.)

Order of Priority	Resource Request Title	Type	Program(s) Impacted	Amount \$
1	STEM Center Counselor	Faculty/ Adjunct FTE	STEM Center, STEM + Allied Health Disciplines	\$106,725
<p>Describe how this request impacts program/division operations, and how it will further completion of the Division goals stated above.</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. Additionally, the STEM Center Counselor supports many of</p>				



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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)

Order of Priority	Resource Request Title	Type	Program(s) Impacted	Amount \$
2	Chemistry Tenure-Track Full Time Faculty	Faculty/ Adjunct FTE	Chemistry	\$100,000

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

- Chemistry course offerings provide: general education degree requirements; prerequisite requirements for other programs at the college and for nursing, medical, dental, pharmacy, and other professional schools; preparation for allied health careers, and pathways to transfer. Chemistry courses are crucial in meeting student academic goals in STEM
- The Chemistry program has a robust program and enrollment in its courses that demonstrate a need for the addition of a full-time faculty member
- The department has not fully replaced FTE lost in the past decade (0.5 FTE)
- One FT faculty member has consistent reassigned time for AFT (9 FLC)
- FT/PT ratio continues to be low: 50.4% / 49.6%
- A significant number of sections are primarily taught by adjunct faculty who are unable to be fully connected with department/college processes. (Goals 1,2,3 and 5)

Order of Priority	Resource Request Title	Type	Program(s) Impacted	Amount \$
3	Physics/Astronomy Tenure-Track Full time Faculty	Faculty/ Adjunct FTE	Physics/Astronomy	\$100,000

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

- FT/PT ratio is low. It is 30%/70% for Physics and Astronomy combined, and 0%/100% for Astronomy only. As Physics and Astronomy has expanded, FT faculty have taken on new responsibilities, namely, the nEXO program (0.2 FTE for each FT faculty), the MESA program (program lead is co-director of MESA, 0.5 FTE), as well as the S-STEM grant (0.2 FTE for program lead who is also PI on the grant).



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- During CPR last year, ASTR courses were observed to be courses of concern due to a low success rate. Given the high demand for these courses (as evidenced by consistently high enrollment), it was identified as an area with considerable potential for growth. A stark lack of diversity among the Astronomy faculty was also evident. Since then, Course Outlines of Record for each of our Astronomy course offerings were fully revised and a new adjunct Astronomy instructor was added to the team. Despite these positive developments, it is clear that Astronomy would further benefit from having a FT faculty dedicated to teaching and developing its courses.
- Our Conceptual Physics and Astronomy course offerings provide general education degree requirements needed for transfer. These courses are crucial in meeting students' academic goals. Astronomy is also a great "gateway" science and a strong program could inspire more students to pursue STEM careers, especially women and other underrepresented minorities in STEM.
- A significant number of sections in both Physics and Astronomy are primarily taught by adjunct faculty who are unable to be fully connected with department/college processes.
- With very few exceptions, every STEM transfer discipline requires one or more physics courses as part of their transfer sequence. (Goals 1,2,3 and 5)

Order of Priority	Resource Request Title	Type	Program(s) Impacted	Amount \$
4	Lab Coordinator	Classified Professional FTE	ELEC/ENGR/PHYS	\$94,604

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

When most of the physics, Engineering and electronic labs coming back in person, and additional lab demands from projects such as nEXO and various honors projects, the workload is becoming difficult to manage for only one lab coordinator, and hiring another lab coordinator is a high priority to provide high quality instruction and meet the needs of all of our students. (Goals 1, 2, 3 and 5)

Order of Priority	Resource Request Title	Type	Program(s) Impacted	Amount \$
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5	Student Activity Space	Renovation/ Designated Space	All STEM Programs	\$10,000
<p>Describe how this request impacts program/division operations, and how it will further completion of the Division goals stated above.</p>				
<p>STEM Center is back to serve students on campus with tutor support, study space and more. With more in person classes, active student clubs' activities and more workshops, the limited space can't meet the needs of STEM students. Often times, when there is an event going on, such as workshop, science in action, student club meetings, students were discouraged to stay in the space continuing their study or social engagement with their peers. STEM Division also has grants supporting students' hands on activities which requires a designed space for uninterrupted activities. (Goals 1, 2, 3 and 5)</p>				

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