Division Summary STEM, Jan. 2021

List of Accomplishments & Notable Items

Biology

- Successful adaptation to DE format, especially for lab courses (special thanks to the Dean and the coordinators :)
- All DE addendums submitted
- Program is growing - big demand (students on waitlists)
- 3 years NSF grant to incorporate biotechnology and career pathway skills
- SOCIL-SLL Seed Grant to test new practices with adaptive technology and other online tools for collaborative student environment
- Offering Smartshops to students across disciplines (Full time and part time faculty involved)
- Sections added at unconventional times to accommodate working students
- Supervising Biology and Nursing Club
- Selected two PSLOs to review as they are interested in identifying potential equity gaps.

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Chemistry

- Course SLOs for all courses were updated and entered into eLumen
    - PSLOs are being drafted so this section of the PR was left blank, but did fill in a CSLO for the non-majors course. The SLO will be implemented starting in spring 2020 (think they meant 2021 based on the table). Rationale for selecting this SLO is that they don't have any PSLOs to review. But nothing is given for why this particular CSLO is of interest to their program.
- All classes moved to online but synchronous mode during Covid - to allow direct interactions with students

- Student graders improved (?)- Wondering if the improved grades were due to losing the C/Failing students to XW or if the grading standards by faculty changed and/or there was more cheating.

Computer Studies

- Success with Code Jam (reaching out to underrepresented groups, encouraging participation, and fostering a sense of community)
    - Equity success - more female and minority students participated in the Jam (in contrast to the industry trends)
- Successful summer intervention to reach out to underrepresented students and preparing them for Fall
- Innovative use of a free online courseware platform from Google that helps students to obtain the designation of IT Support Professional.
- Developing two free non-credit certificates in Help desk and Computer Networking
- Each discipline in the program selected a PSLO for analysis. However, rationale for why they were selected were not given.

Engineering

- 14 total degrees and certificates were approved (adjunct instructor responsible for the bulk of the work)
- A lot of students transfer to 4 year universities (based on informal surveys)
- Developed a strategy to teach electronics-based DE labs and got lab kids for students to use at home (thanks to CARES act money and the Dean :))
    - Spearheaded by an adjunct faculty member
- 10 students were provided laptops with software needed for the classes

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Environmental Science

- Successful work on getting students access to technology during the shift to online learning (e.g. hotspots).

Geography

- Many and diverse courses with some new curriculum units specifically addressing equity. For a department of their size (1FT and 2PT) they have 6 different classes and offer 5 of them each semester. Added in teaching some of the Global Studies courses as well.
- Helps in maintaining a weather station
- New lab assistant is helping to market the discipline
- Updated some of the lab equipment
- All the courses are now DE approved
- PSLOs selected and rationale given. Looks good.

Geology

- Increased collaboration with Geography
- A lot of work was done adapting courses, including fully online labs, to distance education (this included submitting the necessary DE Addendums and implementing new computer technology. In addition, the program got Geology 1 lab in line with OEI requirements so that the OEI certification process can begin
- DE Addendums completed and submitted
- Skills and materials for online education have been massively upgraded due to Covid
- More late start/Fast Track courses, also to include Oceanography
- IT funded CAPPASITY was used to create a library of 3D photos of Rocks and Minerals, videos and other materials
- Has a PSLO review plan in place

Horticulture

- First time Hybrid and DE courses (because of Covid)
- All instructor became more proficient with Canvas and other technology

- Getting a new facility in 2022 (involving advice to insure access to people with disabilities)!
- There is a plan for assessing a PSLO

Mathematics

- Adjusted course offerings in response to enrollments increase (the increase is mostly for upper-level classes and is due to AB 705, Guided Pathways and post-high school placement requirements)
- For the first time offered concurrent support classes (optional for now but might become required for some students)
- Successful Math Jams (ran two) and several Smart shops for students, using free OER as textbooks, as well as collaboration with tutoring center
- Inreach to students who need help
- Communities of practice lead to successful collaboration among faculty in transitioning courses to DE during the pandemic (funded by SCFF)
- Most classes (except 2) are DE approved and some getting OEI approval, "closed the loop" for SLOs
- Math Emporium Curriculum is growing and two new math courses were developed.
- Ranked as the best Math Department of the region (if not the state?) and ranked highly on AMATYC nationally.
- Has a PSLO assessment plan in place

Occupational and Radiation Safety

- Expansion of ES&H Advisory Board membership
- Some classes transitioned successfully to an online mode in response to Covid crisis
- Added three new part-time faculty
- Has a PSLO assessment plan

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Physics and Astronomy

- Success in switching Physics 8 series to the Physics 1 series - students in Physics 1C better prepared for the calculus component
- Change in the Engineering Technology degree requirement led to better retention of students
- Enrolment nearly doubled, ratio of female to male students increased for Physics!
- Creative use of very limited lab space (using the engineering lab space?)
- New laboratory equipment was acquired to replace aging equipment
- There is a plan to assess PSLOs

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Viticulture/Enology:

- LPC Viticulture and Enology Foundation received 501(c)(3) tax exempt status. Completed necessary paperwork to become a 50C3 and those required to meet federal and state requirements
- Successful Fall harvest and wines ready to see in Fall 20
- Maintained vineyard despite change in help available
- Successfully transitioned to online instruction
- Hired new PT lab tech
- Now has own budget for the program
- Began meetings on a new facility
- Has implemented virtual tastings as part of online courses
- Completed DE addendums for all 20-21 VQT courses

List of Challenges and Needs

Biology

- URGENTLY need to hire (replace) full time faculty with with expertise in cell biology and/or biotechnology
- Need an additional full time faculty for Allied Health courses
- Need more facilities for the growing program (expecting challenges with scheduling and preparation for lab classes) - Science Building. Current DE environment allows for "growth," but that cannot be maintained when we are back on campus.
- Need a faculty lead to coordinatie Environmental Studies program and help in getting additional certificate for the program.
- Need to update the discipline plan based on previous data to avoid last minute classes additions.
- Equity gap with lower success rates in Latinx and African American students
- Lack of funds for student tutors and techs for night/weekend labs.
- Need designated time to review manuals and lab activities, as well as train tutors and work on equity.
- Looking for more ways to keep quality of education in DE format (without the hands-on labs) - need more professional development on adopting biology courses to online teaching and equity.
- Potential need for money to create more send-home kits if CARE money runs out.

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Chemistry

- Need to find out why grades changed? Lower faculty standards? Or more EW?

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Computer Studies

- No apparent needs?

Engineering

- Although more unassigned time was allocated for the Coordinator, **it is not nearly enough**
    - The amount doubled from .25 to .5.
- Need to start the hiring process - the only full time faculty and the coordinator is planning to retire soon!
- FTES allocation decreased based on data from Covid-affected semester but it can harm the transfer program
- Need a better measure for counting transfer students
- Need a better assessment of discipline productivity - the benefits of the Engineering Department to the college is largely underestimated due to small classes, but it brings a lot of students to other Departments' classes
- Scheduling is difficult due to conflicts with the other Departments' classes (need more collaboration?)
- Offering labs during Covid was a big challenge
- Need more discussion on DE even after returning to face-to-face (professional development?)
- Not a challenge, but wasn't sure where to put this. Engr has listed a CLSO to review, due to previous years not having a PSLO. However, an online search shows that the degrees/Certs are effective as of Fall 2020, so a PSLO could have been listed that has Engr 1 feed up to it. That way they are meeting the requirement of having a PSLO evaluated within the cycle and also evaluating the Engr data. That said, they can also choose to do the same for their Fall 2021 PR as it will fall within the assessment cycle.

Environmental Science

- Course level data on demographics especially by two factors from IR would help with equity questions. As a cross-disciplinary program it is difficult to track student success with only a snapshot of data from some of the courses in the program.
- Equity gap affecting Latino and African American, but not clear why
- Need designated time for somebody to work on this degree program (including equity issues)
- PSLO chosen for review, but rationale for why it was chosen was not given.

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Geography

- Enrollment is declined due to Covid but also due to competition with other courses for general ed students (needs to be examined between divisions…)
- Need even more marketing to the college and the community
- Not enough funds - shortage in some expensive lab equipment
- Some of the social science needs are not met and might have a better fit in the Social Science Division
    - Starting to see philosophical difference (social science vs science discipline)
- Issues with maintaining the weather station (due to its owners lack of responsibility?)

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Geology

- Covid was a challenge, The program cited a host of Covid-related issues as an impediment to student (and faculty) success (especially students' lack of access to tech support and overload on instructors)
- There is concern that the Quottly search function of OEI is not user-friendly, and that LPC Geology courses are not showing up in searches

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Horticulture

- Need another part-time lab technician because instead of one need two - with two different expertise: Horticulture versus Viticulture and the program anticipates an additional workload with the opening of new facilities in 2022.)
- Need a new front-loader tractor to replace a broken one
- Need one more adjunct instructor
- Had to eliminate non-credit classes, due to lack of a classroom (previously offered by PUSD)

Mathematics

- Covid negatively affected success rate, enrollment and teaching practices; had to cancel some classes too
- Equity for African American students is the biggest challenge (LatinX students too, but for a lesser degree) especially outreach and help with online mode (especially during the Covid crisis)
- for African American Price of mathematic textbooks (they program is exploring the use of OER for its courses)
- Even though Latinx students benefited from HSI grant and the learning communities more needs to be done
- Need to hire at least one full-time faculty (Craig Kutil's position has yet to be replaced) and instructional assistants to meet the anticipated demands of the concurrent support courses
- Need more reassigned time for coordinators, to simplify/update the schedule (because of AB 705), work on free Open Educational Resources (because the textbooks are expensive), to keep all the programs, and more
- Need more support (professional development) and compensation for extra time for part-time faculty.
- Will need more computer lab space (to accommodate the increased demand for Math 40) when come back to campus as well as designated and proctoring center
- It's vital to keep Proctorio and NetTutor, especially with the increased DE load
- Concern that because of AB 705 students are taking the shortest path to a degree without exploring the STEM track as an option

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Occupational and Radiation Safety

- Transitioning to an online mode was difficult, especially for lab components in OSH/RAD classes
- Lack of internship/job shadowing opportunities for students
- Courses need to establish equivalencies between OSH/RAD classes and OSHA Training Institute Courses (need reassigned time?)
- Difficulty with meeting employer needs (need more courses/labs? Work on curriculum?)
- African American students have been underrepresented (no equity plans/actions exist? Need reassign time?)

Physics and Astronomy

- Urgent need for more classroom space to meet student demand (enrollment in physics labs have doubled) and specifically, a second designated physics lab is needed to accommodate and separate the physics equipment from the engineering.
- Urgent need for increased storage space for equipment (in addition to the lab space and NEAR the lab space)
- Vehicle-accessible Dark Sky site and storage shed for telescopes is very needed (can be as easy as paving a road to a dark location in the hills surrounding campus, and building a small storage shed)
- As the program grows, it needs better communication between the Departments (Physics, Engineering, and Astronomy) for faculty and the lab technician, in order to achieve the best balance (have some system) for sharing the time and resources among the three programs. Need Lab tech time specifically devoted to Physics and Astronomy.
- A number of Covid-related challenges, including the faculty-incurred expense obtaining technology and equipment needed to teach quality classes from home over their computers
- Proctoring exams is a big challenge for online classes: difficulties concerning academic honesty (especially in the absence of Proctorio); maybe need on-campus exams for online classes in future?
- Challenges of not being able to conduct in-person labs. Many labs were cancelled due to Covid and wildfires, and higher workload was experienced for others.
- At-home labs need double the time (maybe should be compensated better?), some impossible to do at home
- Students are having difficulties communicating and building relationships with their group members (more professional development for online teaching and creating online communities?)
- Need for tutors

Viticulture/Enology

- Facilities remain inadequate, leading to possible safety issues. Plans for construction continue but it appears the budget is insufficient to fulfill the plans identified in the facilities master plan and won't be completed until 2020
- There is a strong need to hire an independent contractor to manage the labor of maintaining the vineyard - a new labor contract is required. Hundreds of unpaid faculty hours went into vineyard maintenance during spring and summer 20.
- Need support for wine maintenance and streamlining of compliance paperwork from the Office of Administrative Services
- Need more FTEF to hire PT faculty with speciality expertise
- Need to hire a fulltime winery manager, along with more reassign time
- Need a lab tech with both viticulture and winery technology experience
- Has to cancel high demand courses due to COVID
- Need to examine the process of collecting materials fees and the possibility of a scholarship to defray the cost of these fees for some students

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Priorities and Recommendations

I. List of Universal needs/priorities - identified by all or most programs in the Division

A. Quick fix (Can be done now or soon; may take little/no extra resources)

1. Course level disaggregated data -- provide training and clarify how to request

B. Interim (more work required but can be done within the academic year)

1. Strategies to identify and address equity gaps, including training

2. Continuity of teaching and learning platforms (NetTutor, Proctorio)
3. Marketing and messaging (AB 705 recruitment into STEM pathways, promotion of programs and pathways)
4. Covid-related challenges (technology needs, instructional support, student outreach and support timeliness and effectiveness, communication) will need resources (professional development, technology support, financial)

C. Structural process (longer-term work to be done to "resolve")

1. Additional facilities needs for Bio/Chem/Physics/Engineering (labs/storage/telescope) to accommodate growth and safety
2. More professional development and support for online education and best practices
3. Increased reassigned time for quantity and quality of work expected of faculty coordinators
4. Increase in lab technician hours and/or time (Hort/VWT; Engr/Physics)
5. Single-faculty departments need more support for curriculum development and other program work (OSH alignment with OSHA)
6. Provide resources (people) to support the various ways programs connect with employers (internships, curriculum development)

II. List of Program needs - identified by only one or a few programs, but still needs consideration

A. Quick fix (Can be done now or soon; may take little/no extra resources)

1. Re-align work of Engr/Physics technician

2. Vineyard maintenance contractor has been challenging to hire, and is critical
3. Address geography concern re: enrollment issues with GE courses in other programs
4. Weather station resolution

B. Interim (more work required but can be done within the academic year)

1. Hire FT biology faculty --this is critical
2. Additional support for compliance aspects for Campus Hill Winery--consider asking board treasurer and secretary to take on responsibilities
3. Attention to safety concerns in VWT labs
4. Geography should use IER process to request expensive lab equipment
5. Resolve how to bring instructional aide to Noncredit Horticulture
6. Analyze concurrent support program needs

C. Structural process (longer-term work to be done; research and investigation required to "resolve")

1. Prepare for retirement for Engineering--how to train someone when retirement is not announced and hiring process for replacement is separate
2. Examine realignment of Geography and consider how to resolve science lab and lab technician with desire to associate with social science
3. HIre new faculty to develop programs (Environmental) and to meet high demand for Allied Health

4. Increase hours and/or positions for VWT and Hort technician to eventually align with programmatic needs when new facilities come online
5. Hire faculty for vacant position in mathematics
6. Online textbook support (math)
7. Develop fulltime winery manager