NORCO COLLEGE

Program Review - Overall Report

Instructional: Chemistry

Data Review

2021 - 2024

Overall Trends

What overall trends do you see in success, retention, program of study, educational planning, and awards over the past 3 or more years?

Overall, the success of students in Chemistry courses increased from 65.9% to 68.7% and retention has decreased from 83.1% to 81.8% over the past 3 years. The slight dip in retention rate over the three-year period is likely due to the retention-rate decrease that accompanied the unanticipated switch to on-line instruction in Spring 2020, since the retention rate for students in chemistry courses at Norco College in Spring 2020 was 77.7%.

The students in Chemistry courses have decreased in their rate of receiving less than passing (DF) grades during this time.

The number of students who have declared a major in Chemistry increased from 38 to 72 in 3 years, representing an increase of 89.5%. Of these students, 12.4 % have met with a counselor and developed an educational plan.

The number of students who have completed a degree or certificate in Chemistry increased from 1 to 8 in 3 years. In the most recent year, 8 students graduated. The expected number of students who should get a degree would be approximately 14 (20% of 72). The gap (14-8) in the pipeline of those receiving a certificate versus a degree is approximately six more students.

Disaggregated Student Subgroups

Look at the disaggregated student subgroups in success, retention, program of study, educational planning, and awards for your area. Are there any equity gaps that you will address in the next 3 years?

The data for Chemistry students falls short in two areas. The success of Hispanic females in Chemistry courses was 62.5% versus the overall success of Hispanic females in all courses at Norco College, which was 70.1%. Additionally, Hispanic males had a retention gap in Chemistry courses. The retention of Hispanic males in Chemistry courses was is 80.3% versus the overall retention of Hispanic males in all

Data Review

courses at Norco College, which was 84.1%. It's unclear what led to the decrease in the success rates of Hispanic females over this time period. However, the lower retention rates of Hispanic males may be due to the substantially lower retention rate (70.2%) of Hispanic males in Spring 2020 from the College's transition to online instruction.

If there are any concerning trends over the past 3 or more years, or if equity gaps exist, what is your action plan to address them?

While most of our success and retention data are as good or better than the those from College overall, the Chemistry discipline will continue to monitor these gaps in these areas in subsequent semesters. Additionally, we plan to take the following actions:

- have discipline meetings with all Chemistry instructors to discuss these trends to come up with specific ways to improve these numbers,
- ensure our associate instructors are made aware of equity resources within the District, especially those that are geared toward STEM-related areas, and
- learn what other disciplines that have higher success and retention rates are doing to improve their rates and strive to brings those items into our Chemistry classes.

These will specifically be geared toward improving the success and retention rates of Hispanic students.

Is there a resource request associated with this Data Review? (If yes, please complete a Resource Request, which you can access from the main menu to the left)

Yes

Assessment Review

2021 - 2024

Section 1: SLO Assessment Status (Based on Dashboard - Assessment Status)

Which Disciplines are included in this Assessment?
CHE
What percent of SLOs in the disciplines you identified above have been assessed?
100.0%
Which SLOs have not been assessed and why? Identify both the Course and the associated SLO(s).
N/A

Section 2: Mapping Status (Based on Dashboard - Mapping Status)

Are all SLOs mapped to at least one PLO?
Yes
If all SLOs are not mapped to at least one PLOs, please explain why.
N/A
Are the appropriate SLOs mapped to GELOs? (If you have a course that is listed in any general education area, it should have at least one SLO mapped to at least one GELO)
No
If the appropriate SLOs are not mapped to GELOs, please explain why.
We are in the process of mapping SLOs to GELOs.

Section 3: PLO Analysis (Based on Dashboard - Analysis: PLO Direct Assessment)

Which Programs are included in this Assessment?
CHE
Please identify the PLO(s) - and name the associated Program(s) - that achieved benchmarks.
CHE-PLO1, PLO2, PLO3, PLO4
To what to you attribute this success?
During the last assessment cycle, we mapped our PLOs onto our SLOs. Thus, when we completed our SLOs, our PLOs were automatically done.
Please identify the PLO(s) - and name the associated Program(s) - that did not achieve benchmarks.
N/A
If there are PLOs that did not achieve benchmarks, what do you plan on doing to improve benchmark attainment?
N/A

Section 4: Alignment to Career and Transfer

Describe the process used in this area to ensure programs (PLOs) align with career and transfer needs.
We reviewed these PLOs in discussions with our Chemistry counterparts at the other college in the District during the Summer of 2020 and determined that our course PLOs continue to meet our career and transfer needs.

Assessment Review

Describe the activities, projects, and opportunities this program offers to support experiential learning and alignment of programs to career and transfer (e.g. capstone projects, portfolios, service-learning opportunities).

Some our general chemistry (CHE-1A/B) laboratories require that students develop their own laboratory procedures to encourage independent thinking and problem-solving skills, which are especially important skills for careers in Chemistry and other science fields. We also just obtained a state-of-the-art nuclear magnetic resonance spectrometer for use in our Organic Chemistry classes, which provides hands-on learning opportunities in instrumentation, which is also directly transferrable to careers in chemistry. Use ACS (American Chemical Society) standardized exams for additional assessment to compare to students nation-wide for Organic and General Chemistry Curriculum.

Without looking at your current PLOs, describe some program outcomes which would best help your students continue on the path towards their workforce and transfer goals (e.g. subject matter expertise, hands on experience, partnerships, etc.).

Having more instruments so that students have more hands-on learning opportunities. Incorporating more inquiry-based experiments in the lab curricula in order to hone their problem-solving skills.

Review current PLOs. Do the outcomes listed above align with the current program outcomes?

Yes.

Program Review: Part 1

EMP GOAL 1. Expand college access by increasing both headcount and full-time equivalent students (FTES).

GOALS AND ACTIVITIES

What are you doing now in support of this goal?

- Continue to offer more sections of Chemistry course based on the availability of qualified associate facutly and limited full-time Chemistry instructors and lab space.
- Create new Chemistry course offerings (CHE-1AH, CHE-2B, and CHE-3).
- Reduce course caps in Introductory and General Chemistry lab courses from 32 to 25 students to maintain safe laboratory practices as well as give students a greater opportunity for increased contact with faculty to ensure their success in the courses. The course cap of 25 students for chemistry lab courses, which is the standard set by the American Chemical Society (ACS) and is consistent with the standards set by the National Fire and Prevention Association (NFPA).

What are your plans/goals (3-year) regarding this goal?

- Build new course curricula for CHE-3 (Fall 2022) and CHE-1AH (Fall 2023) and start offering sections of these courses.
- Hire a new full-time faculty member in Chemistry.
- Hire a new full-time laboratory technician.
- Create new laboratory space for more sections of Chemistry courses.
- Create more storage space to safely store chemicals and materials for current and new laboratories.

EVIDENCE

Do you have assessment data or other evidence that relates to this goal?

- National Fire Protection Association (NFPA) Guidelines
    - https://www.nfpa.org/Codes-and-Standards/All-Codes-and-Standards/List-of-Codes-and-Standards

Program Review: Part 1

- American Chemical Society Guidelines for Chemistry for Two-Year College Program
    - https://www.acs.org/content/acs/en/education/policies/two-year-college.html

Reducing Class-Size Caps for General and Introductory Chemistry Courses at Norco College

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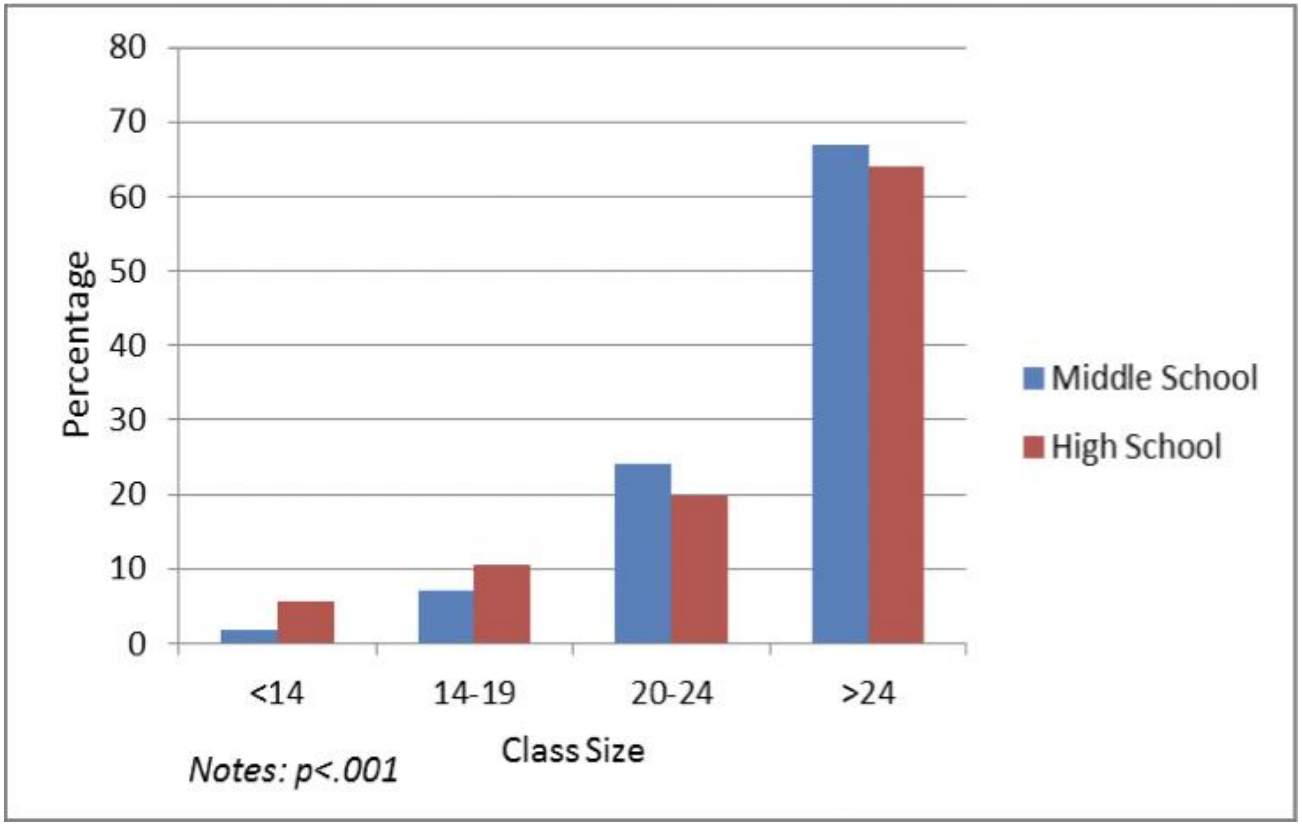
The American Chemical Society (ACS) provides guidelines for lab safety. The ACS is the largest scientific society in the world and the largest professional society for those who work in the chemistry field worldwide. Thus, the ACS is viewed as the authority for all chemistry-related things. In this regard, the "ACS Guidelines for Chemistry for Two-Year College Programs"1,2 recommends that academic laboratory classes have no more than 25 students to provide an optimal educational experience that minimizes overcrowding and maintains a safe working environment.

The National Fire Protection Association (NFPA) also provides guidelines for optimal workspace for student in lab classes. The NFPA is a leader in knowledge and resources regarding fire- and hazard-related issues and prevention. In its Life Safety Code 101-2012 Occupant Load Factor for educational science labs,3 the NFPA recommends that each student in an educational lab environment have at least 50

square feet of net work space. (Net work space is work space that excludes lab tables and benches.) We estimate that each student in our Introductory Chemistry lab room has about 24 square feet of net work space and each student in the General Chemistry lab room has about 35 square feet of net work space, which are far below the NFPA safety guidelines.

There is strong evidence than lower lab caps are correlated with safe lab environment. For example, the National Science Teachers Association published "Overcrowding in the Instructional Space" (April, 2014) with data collected from 199 secondary public schools in 2001 on overcrowding in academic lab classes. While this study used data from middle and high school lab classes, it's likely that the trends can be extended to any academic laboratory environment. This study found that accidents and incidents 1) increased by 82% (from 11% to 20%) when the high school lab class enrollments went from 14-19 students to 20-24 and 2) increased by an astonishing 320% (from 20% to 64%) when the high school lab class enrollments were above 24 high school students (Figure 1)4.

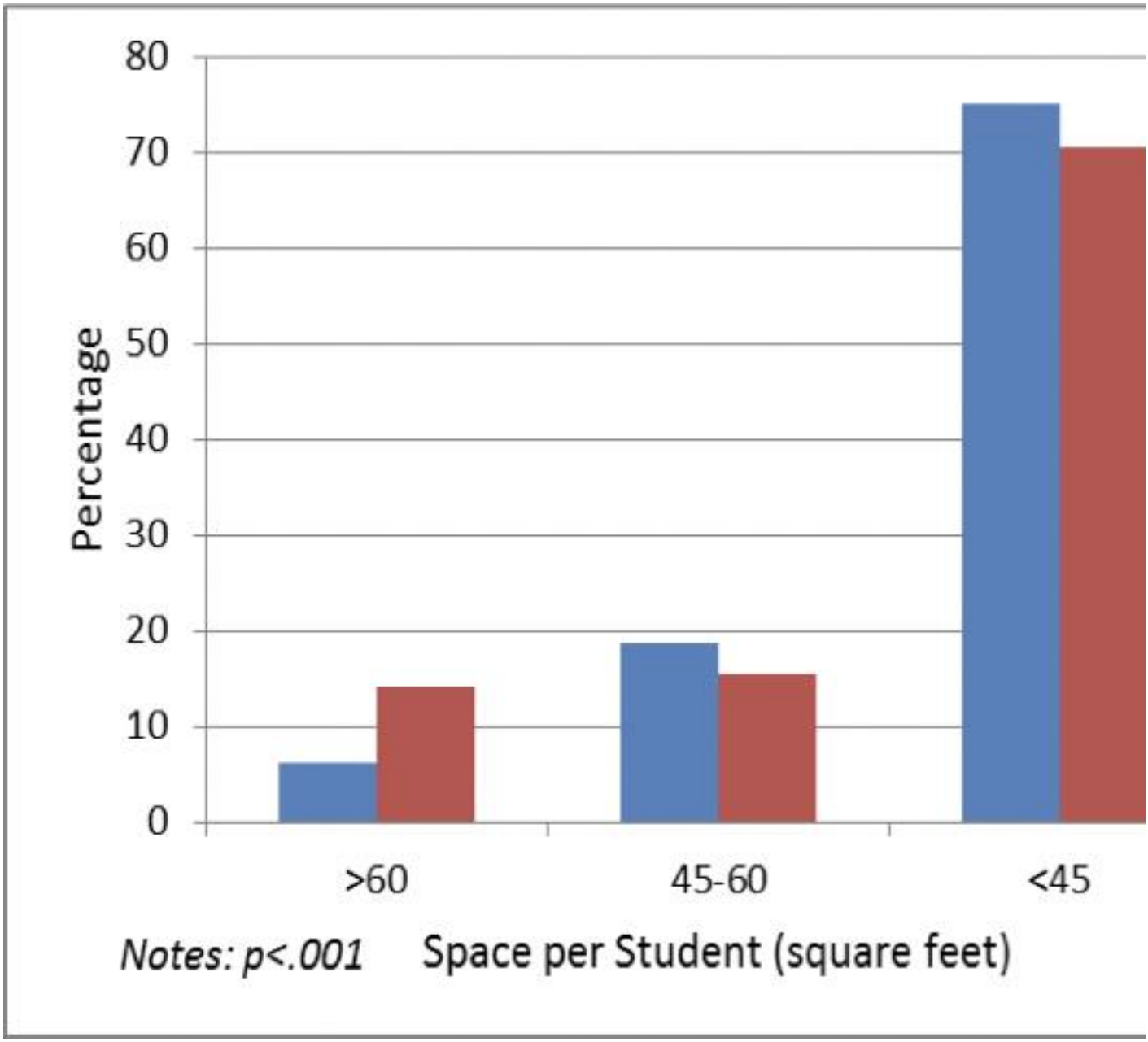
Figure 1: Accidents Increase as Class Size Increases (p<0.001)



Program Review: Part 1

Moreover, incidents and mishaps increased 473% (from 15% to 71%) as the classroom space per student decreased from greater than 45-60 ft2 to less than 45 ft2 of net space per student (Figure 2)4. These data strongly support the concept that lab class sizes of more 24 students and less than 45 ft2 of net space per student does not provide a safe and effective learning environment for students and faculty.

Figure 2: Accidents Increase as Space/Student Decreases (Elbow Space) (p<0.001)



Lower lab cap

Program Review: Part 1

The data in the following table shows how Norco College compares to several local community colleges:

Community College	Che-1A & Che-1B	Che-2A & Che-3
Golden West	25	25
Mt. SAC	24	24
Santiago Canyon	24	24 or 26 (depends on room)
El Camino	30	30
Cerritos	27	30
Norco	32	32
Riverside	30	30

By decreasing the class size from 32 to 25 students, accidents and liability for those accidents should decrease. We are asking that the District and Norco College support the Chemistry faculty in having a cap of 25 students in all Introductory and General Chemistry lab courses to maintain a workplace that is safe and supports effective learning.

1. American Chemical Society. *Safety in Academic Chemistry Laboratories; Vol. 2, Accident Prevention for Faculty and Administrators,* 7th ed.; American Chemical Society: Washington, DC; 2003.
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3. 7 National Fire Protection Association. NFPA 101: *Life Safety Code*, 2015. http://www.nfpa.org/codes-and- standards/document-information-pages?mode=code&code=101 (accessed June 26, 2017)

4. National Science Teachers Association, “Overcrowding in the Instructional Space”, static.nsta.org/pdfs/OvercrowdingInTheInstructionalSpace.pdf, NSTA; 2014.

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RESOURCES

Is there a resource request associated with this EMP Goal? (If yes, please complete a Resource Request, which you can access from the main menu to the left)

Yes

EMP GOAL 2. Implement Guided Pathways framework.

GOALS AND ACTIVITIES

What are you doing now in support of this goal?

The District recently submitted an NSF S-STEM ($1.5 million) proposal to aid Norco College students with scholarship funds to complete their program of study at Norco College in two years and successfully transfer to a four-year university. This program will be led by Norco College Chemistry faculty.

An effort is underway to reduce course caps in Introductory and General Chemistry lab courses from 32 to 25 students to maintain safe laboratory practices as well as give students a greater opportunity for increased contact with faculty to ensure their success in the courses. The course cap of 25 students for chemistry lab courses, which is the standard set by the American Chemical Society (ACS) and is consistent with the standards set by the National Fire and Prevention Association (NFPA).

What are your plans/goals (3-year) regarding this goal?

If the grant is awarded, the anticipate start date will be Spring 2022 and will provide scholarship money to 22 Chemistry students through 2024. The grant will also establish learning communities for Chemistry students and aid these students in the Chemistry classes.

Reduce course caps in Introductory and General Chemistry lab courses from 32 to 25 students to maintain safe laboratory practices as well as give students a greater opportunity for increased contact with faculty to ensure their success in the courses. The course cap of 25 students for chemistry lab courses, which is the

standard set by the American Chemical Society (ACS) and is consistent with the standards set by the National Fire and Prevention Association (NFPA).

EVIDENCE

Do you have assessment data or other evidence that relates to this goal?

The demand for healthcare professionals, engineers, kinesiology, and scientists remains high and is expected to remain high. Chemistry is considered the central science for most STEM- and health-related fields.

Document Repository - Norco NSF S-STEM Proposal

- National Fire Protection Association (NFPA) Guidelines
  - https://www.nfpa.org/Codes-and-Standards/All-Codes-and-Standards/List-of-Codes-and-Standards
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Program Review: Part 1

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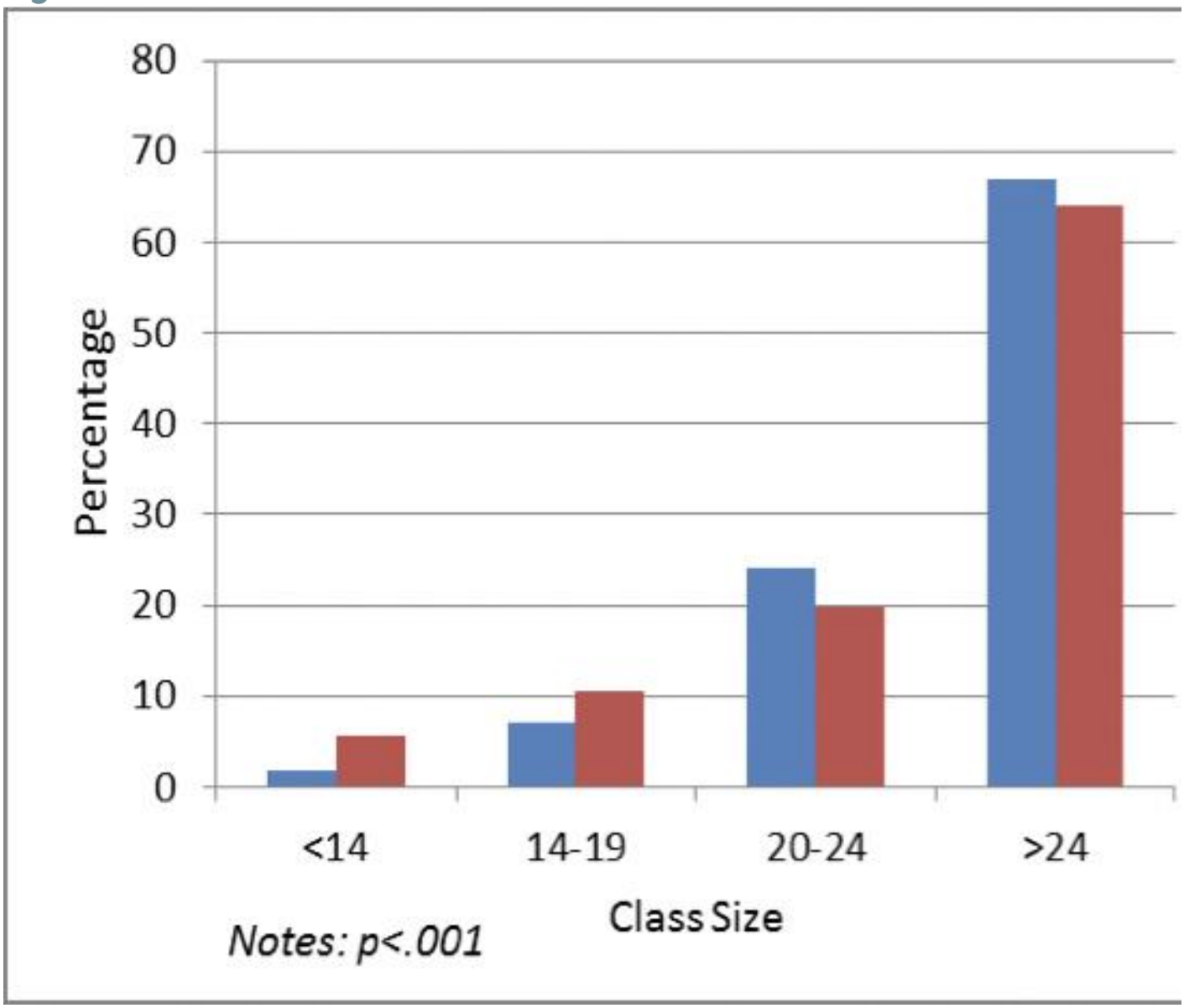

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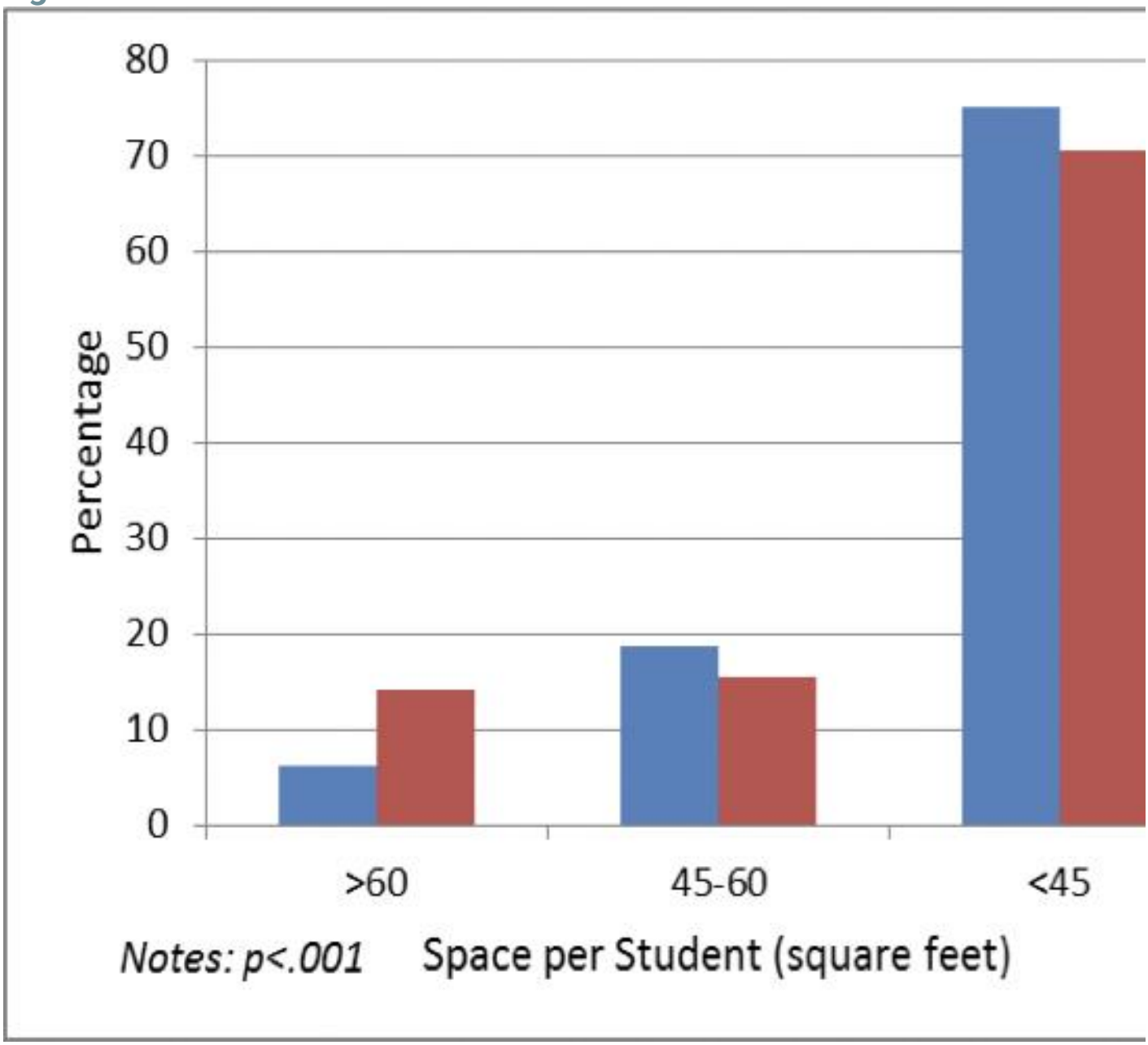

Lower lab cap

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Program Review: Part 1

RESOURCES

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No

EMP GOAL 3. Close all student equity gaps.

GOALS AND ACTIVITIES

What are you doing now in support of this goal?

- The District recently submitted an NSF S-STEM ($1.5 million) proposal to aid Norco College students with scholarship funds to complete their program of study at Norco College in two years and successfully transfer to a four-year university. This program will be led by Norco College Chemistry faculty. This program will specifically target low-income and/or underrepresented students into chemistry transfer pathways
- Chemistry faculty continue to attend workshops, meetings, and RCCD FLEX events that address closing equity gaps for STEM students.
- Reduce course caps in Introductory and General Chemistry lab courses from 32 to 25 students to maintain safe laboratory practices as well as give students a greater opportunity for increased contact with faculty to ensure their success in the courses. The course cap of 25 students for chemistry lab courses, which is the standard set by the American Chemical Society (ACS) and is consistent with the standards set by the National Fire and Prevention Association (NFPA).
- Planning to create a lab curriculum involving a free lab textbook to decrease overall cost for the students

What are your plans/goals (3-year) regarding this goal?

- If the grant is awarded, the anticipate start date will be Spring 2022 and will provide scholarship money to 22 low-income and/or underrepresented Chemistry students through 2024. The grant will also establish learning communities for low-income and/or underrepresented Chemistry students and aid these students in the Chemistry classes.
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Program Review: Part 1

- Develop the intended lab curriculum involving zero cost lab textbooks

EVIDENCE
Do you have assessment data or other evidence that relates to this goal?
Document Repository - Norco NSF S-STEM Proposal

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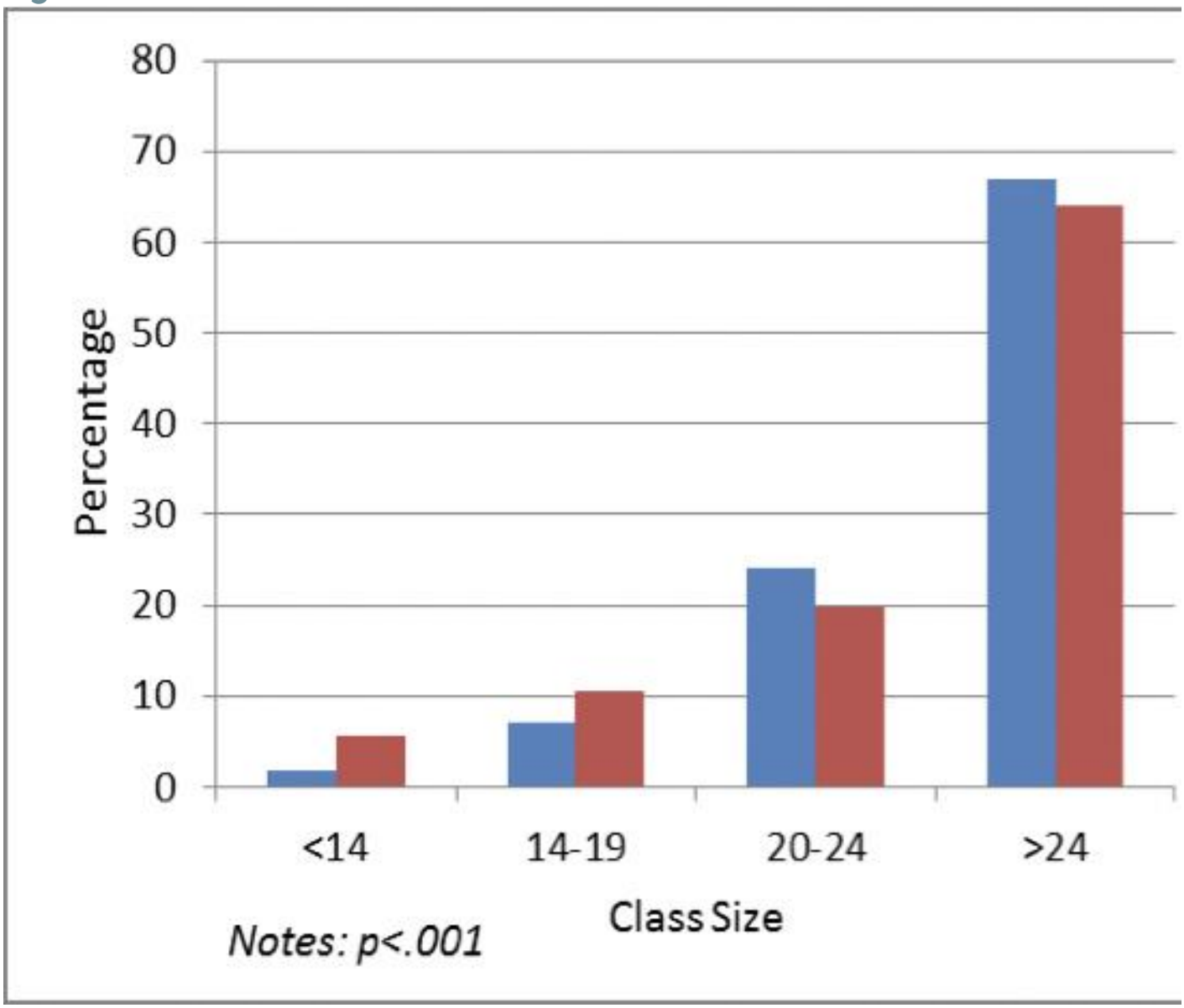

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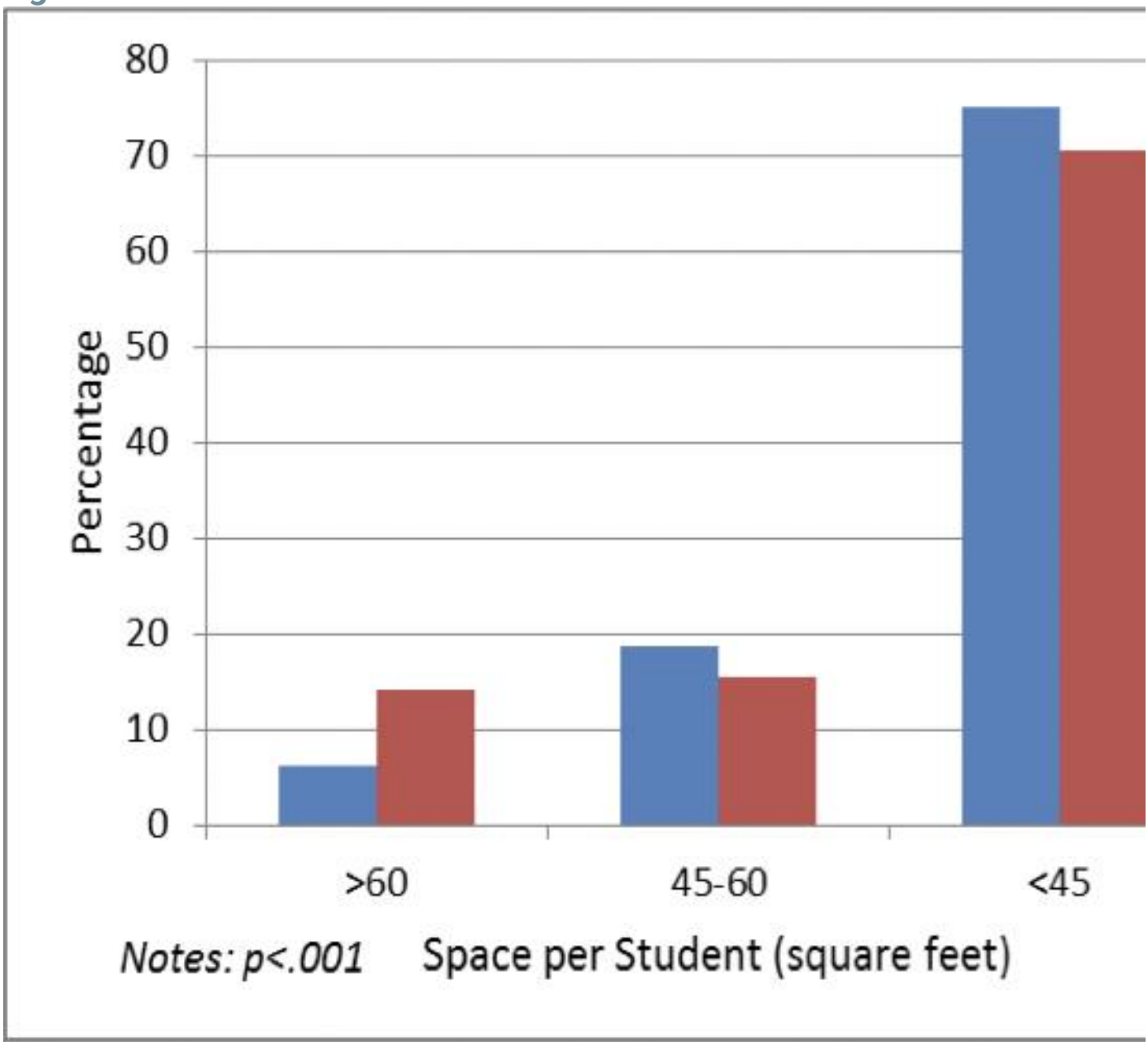

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Program Review: Part 1

RESOURCES

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Yes

EMP GOAL 5. Reduce working poverty and the skills gap.

GOALS AND ACTIVITIES

What are you doing now in support of this goal?

The Chemistry discipine at Norco College services more than 1,300 students/year as a general education requirement and to fulfil the course requirements for nearly all STEM and healthcare majors. A number of these STEM and healthcare majors lead to high paying/high skill jobs. Thus, all Chemistry courses are needed to alleviate the working poverity and skills gap Additional equipment and storage facilities for chemicals are required to accommodate growth in chemistry courses.
Moreover, safety guidelines must be updated to accommodate growth (e.g., course caps in some chemistry labs, etc.)

What are your plans/goals (3-year) regarding this goal?

- Continue to increase the number of sections of all existing Chemistry course offerings
- Develop new Chemistry course offerings at Norco College including CHE-3, CHE-1AH, and CHE-2B.

EVIDENCE

Do you have assessment data or other evidence that relates to this goal?

The demand for healthcare professionals, engineers, kinesiology, and scientists remains high and is expected to remain high. Chemistry is considered the central science for most STEM- and health-related fields.
Document Repository - EMP Goal 5 - C&E Salary Surveys 2020

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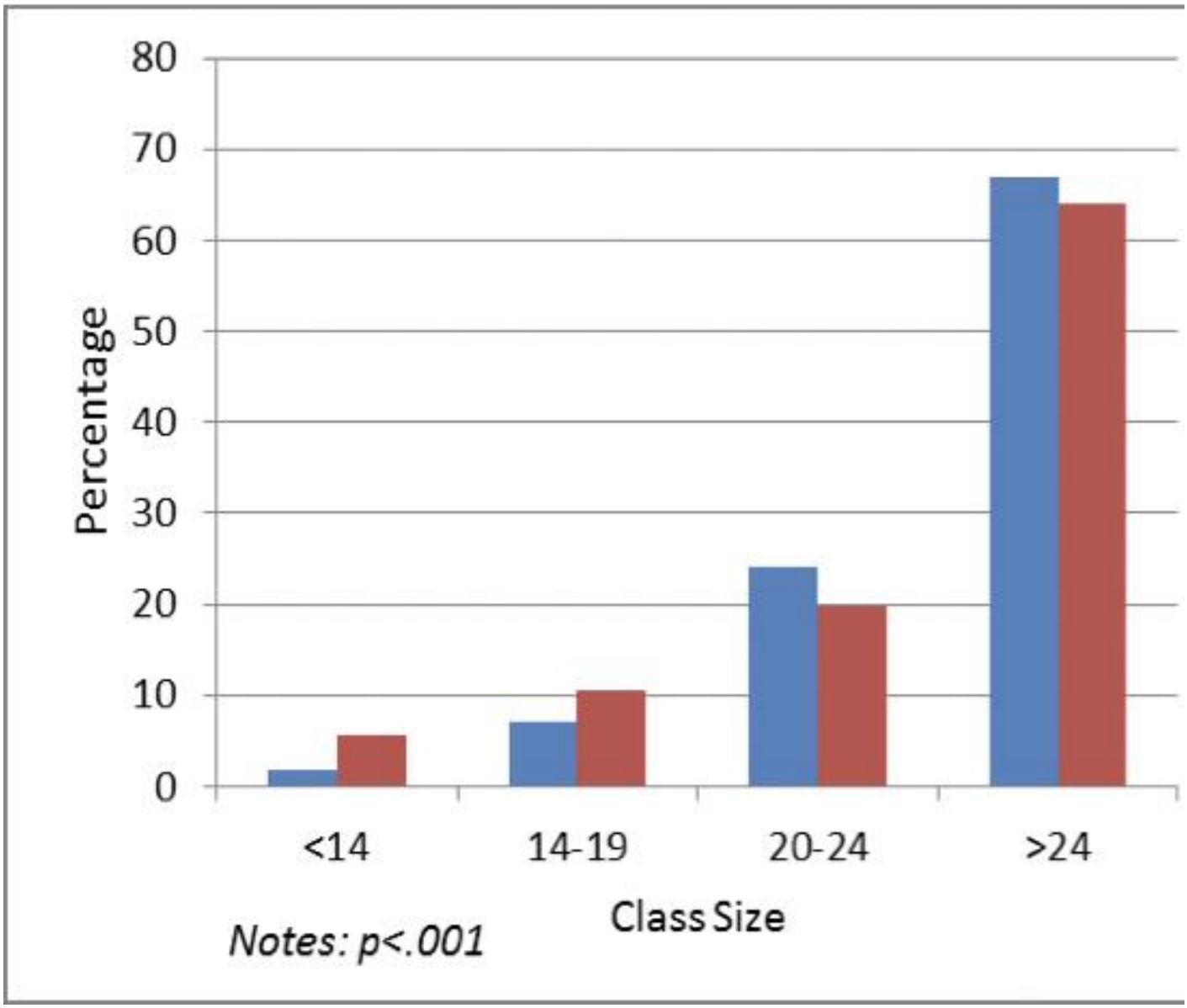
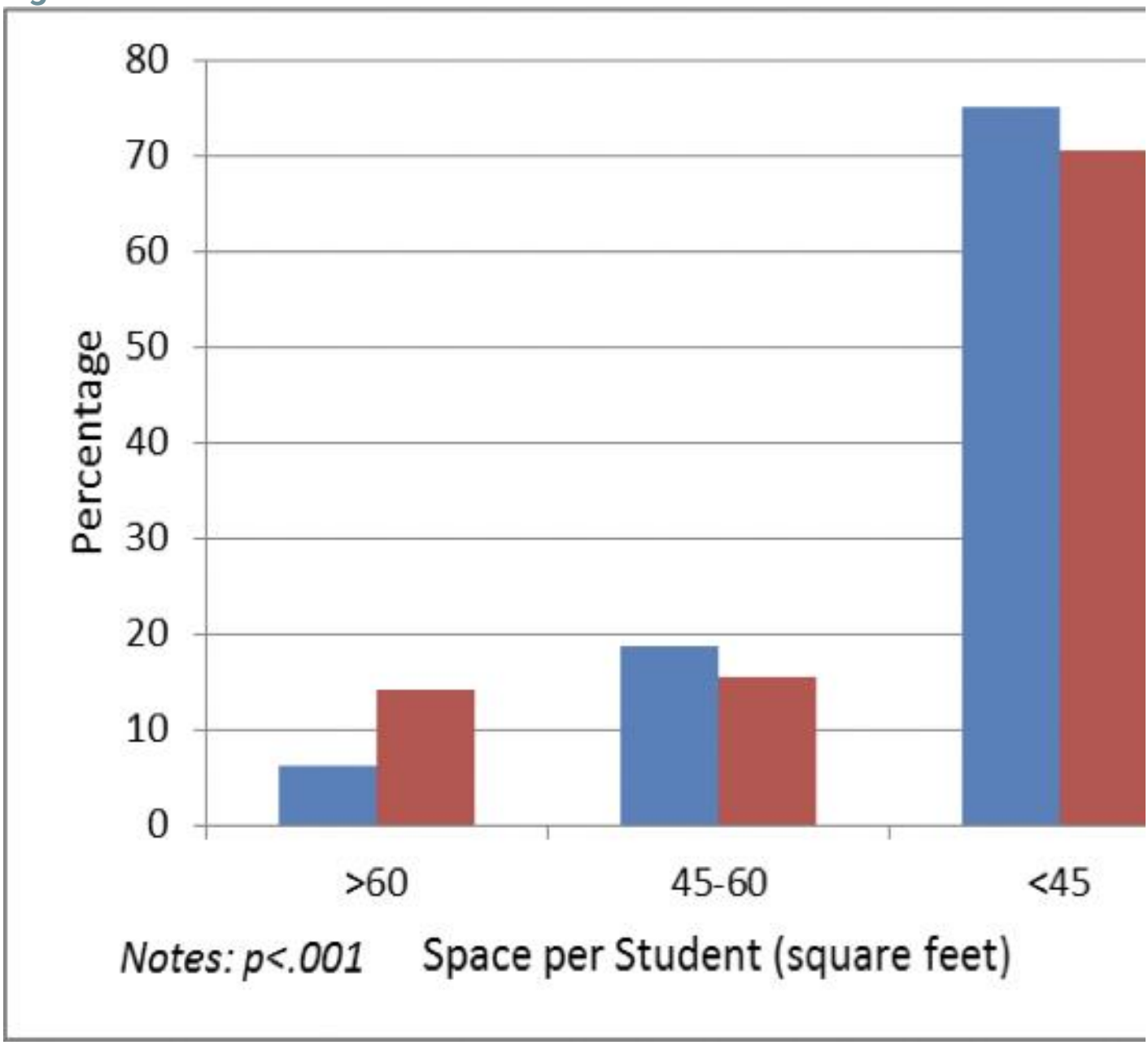
an astonishing 320% (from 20% to 64%) when the high school lab class enrollments were above 24 high school students (Figure 1)4.

Figure 1: Accidents Increase as Class Size Increases (p<0.001)



Moreover, incidents and mishaps increased 473% (from 15% to 71%) as the classroom space per student decreased from greater than 45-60 ft2 to less than 45 ft2 of net space per student (Figure 2)4. These data strongly support the concept that lab class sizes of more 24 students and less than 45 ft2 of net space per student does not provide a safe and effective learning environment for students and faculty.

Figure 2: Accidents Increase as Space/Student Decreases (Elbow Space) (p<0.001)



Lower lab cap

The data in the following table shows how Norco College compares to several local community colleges:

Community College	Che-1A & Che-1B	Che-2A & Che-3
Golden West	25	25
Mt. SAC	24	24

Santiago Canyon	24	24 or 26 (depends on room)
El Camino	30	30
Cerritos	27	30
Norco	32	32
Riverside	30	30

By decreasing the class size from 32 to 25 students, accidents and liability for those accidents should decrease. We are asking that the District and Norco College support the Chemistry faculty in having a cap of 25 students in all Introductory and General Chemistry lab courses to maintain a workplace that is safe and supports effective learning.

1. American Chemical Society. *Safety in Academic Chemistry Laboratories; Vol. 2, Accident Prevention for Faculty and Administrators,* 7th ed.; American Chemical Society: Washington, DC; 2003.
2. American Chemical Society. *ACS Guidelines for Chemistry in Two-Year College Programs*, Fall 2015 ed.; American Chemical Society: Washington, D.C; 2015.
3. 7 National Fire Protection Association. NFPA 101: *Life Safety Code*, 2015. http://www.nfpa.org/codes-and- standards/document-information-pages?mode=code&code=101 (accessed June 26, 2017)
4. National Science Teachers Association, “Overcrowding in the Instructional Space”, static.nsta.org/pdfs/OvercrowdingInTheInstructionalSpace.pdf, NSTA; 2014.

?

RESOURCES

Is there a resource request associated with this EMP Goal? (If yes, please complete a Resource Request, which you can access from the main menu to the left)

Yes

GOALS AND ACTIVITIES

What are you doing now in support of this goal?

The District recently submitted an NSF S-STEM ($1.5 million) proposal to aid Norco College students with scholarship funds to complete their program of study at Norco College in two years and successfully transfer to a four-year university. This program will be led by Norco College Chemistry faculty. If the grant is awarded, the anticipate start date will be Spring 2022 and will provide scholarship money to 22 Chemistry students through 2027. The grant will also establish learning communities for Chemistry students and aid these students in the Chemistry classes.
Part of this proposal involves collaborating with local high schools to identify students for these scholarships.
Another part of this proposal is to help increase success and retention rates for students to complete their program of study within two years. The final part of the proposal is to work with La Sierra and UC Riverside to guarantee transfer of these students to these institutions.

What are your plans/goals (3-year) regarding this goal?

- If the grant is awarded, the anticipate start date will be Spring 2022 and will provide scholarship money to 22 low-income and/or underrepresented Chemistry students through 2024. The grant will also establish learning communities for low-income and/or underrepresented Chemistry students and aid these students in the Chemistry classes.
- Chemistry faculty will continue to attend workshops, meetings, and RCCD FLEX events that address closing equity gaps for STEM students.

EVIDENCE

Do you have assessment data or other evidence that relates to this goal?

Document Repository - Norco NSF S-STEM Proposal

RESOURCES

Is there a resource request associated with this EMP Goal? (If yes, please complete a Resource Request, which you can access from the main menu to the left)

No

Program Review: Part 1

EMP GOAL 7. Become the regional college of choice by offering a comprehensive range of programs that prepare students for the future and meet employer workforce needs.

GOALS AND ACTIVITIES

What are you doing now in support of this goal?

- The District recently submitted an NSF S-STEM ($1.5 million) proposal to aid Norco College students with scholarship funds to complete their program of study at Norco College in two years and successfully transfer to a four-year university. This program will be led by Norco College Chemistry faculty. This program will specifically target low-income and/or underrepresented students into chemistry transfer pathways. This scholarship program will attract disadvantaged students into the Chemistry Program at Norco College.

- The Chemistry discipline will continue to increase both new course offerings and sections of current courses to better serve members of the community and local areas for their educational needs.

- The Chemistry discipline continues to request additional chemistry faculty members, lab facilities and Chem Tech support staff to meet the current and anticipated increased demand for chemistry courses.

What are your plans/goals (3-year) regarding this goal?

We will work towards hiring an additional chemistry faculty member (to give 5 total full-time faculty) and a Chem Tech support staff. We will also work towards increasing chemistry course offerings and chemistry lab facilities to enable more students to take chemistry courses at Norco College.

EVIDENCE

Do you have assessment data or other evidence that relates to this goal?

Document Repository - Norco NSF S-STEM Proposal

The demand for healthcare professionals, engineers, kinesiology, and scientists remains high and is expected to remain high. Chemistry is considered the central science for most STEM- and health-related fields.

RESOURCES

Is there a resource request associated with this EMP Goal? (If yes, please complete a Resource Request, which you can access from the main menu to the left)

Yes

EMP GOAL 9. Expand workforce to support comprehensive college and develop/sustain excellent workplace culture.

GOALS AND ACTIVITIES

What are you doing now in support of this goal?

We continue to offer as many courses as possible to meet the demand of students despite having only 4 full-time Chemistry faculty members and limited Lab Tech support.

What are your plans/goals (3-year) regarding this goal?

We are requesting a new full-time chemistry faculty member and a full-time Lab Tech to support existing and future class offerings. We would like to be a more comprehensive Chemistry Discipline by offering Che-1AH, Che-3, and Che-2B, as these courses are not currently taught at Norco College due to lack of personnel.

EVIDENCE

Do you have assessment data or other evidence that relates to this goal?

The Chemistry discipline at Norco College has a need for a new full-time faculty member and an additional full-time Lab Tech to ensure that it is able to meet the course demands of students. This need is evident when considering the percentage of chemistry FTES that are taught by full-time faculty vs. part-time faculty. For example, in the 2019-2020 academic year, the Chemistry discipline offered 18.6 FTEs based with the following breakdown by term:

Term	Chemistry FTE
Summer 2019	1.2
Fall 2019	7.8
Winter 2020	1.2
Spring 2020	8.4

total for 2019-2020 academic year 18.6

If these numbers hold for the 2021-2022 academic year and if each of the four current full-time faculty member teaches the targeted 1.0 FTE in both the Fall and Spring semesters, then only 43.0% (8.0/18.6) of the FTEs in the 2021-2022 academic year will be taught by full-time faculty members. However, this analysis does not factor in the release time that Chemistry faculty members receive for their Norco College institutional service and does not take account any growth in the Chemistry discipline's course offerings beyond the 2020-2021 academic year. Thus, the actual percentage of FTEs that will be taught by full-time faculty at Norco College will likely be lower than 43.0% during 2020-2021 and beyond. Additionally, this analysis assumes that the Chemistry discipline will be granted an automatic replacement position for the Chemistry faculty member who is going to retire in June 2021. [If this Chemistry position is not replaced, then only 32.2% (6.0/18.6) of the FTEs in the 2021-2022 academic year will be taught by full-time faculty members.]

The low percentage of Chemistry FTEs that will taught by full-time faculty members poses challenges for the Chemistry discipline. For example, it requires that the discipline hire several part-time faculty members to teach the majority of its classes. However, finding qualified part-time faculty members in Chemistry is difficult, which has limited the number of sections that the discipline was able to offer in past terms. Additionally, a new full-time Chemistry faculty member is needed to grow Norco College's Chemistry program. While neither CHE-2B or CHE-3 are currently offered at the College, there is a need for both of these classes. CHE-2B is needed for many students in the health-related fields and is required for the ADT for Kinesiology, and CHE-3 is an introductory chemistry course for science majors that is designed to serve as the prerequisite for the first semester of General Chemistry (CHE-1A). While the college currently uses CHE-2A as its CHE-1A prerequisite, this course is not demanding enough to adequately prepare students for the rigors of General Chemistry (CHE-1A/1B). Thus, the College is not serving the needs of its students by not offering CHE-2B and CHE-3. If the current full-time faculty members develop and

subsequently teach these courses, then they would not be available to teach upper-level chemistry courses. This would create a void in the discipline's course offerings because it is exceedingly difficult to qualified adjunct faculty to teach upper-level chemistry courses. Thus, a new Chemistry faculty member is needed to both ensure that Chemistry course offerings are able to meet the needs of students and to expand the discipline's course offerings.

RESOURCES

Is there a resource request associated with this EMP Goal? (If yes, please complete a Resource Request, which you can access from the main menu to the left)

Yes

EMP GOAL 10. Build a comprehensive and inspiring campus integrated into the region that serves as a destination for education, commerce, life, and the arts.

GOALS AND ACTIVITIES

What are you doing now in support of this goal?

We are unable to offer even more chemistry lab courses due to lack of funds to support additional lab space. Chemistry lab courses are the bottleneck to offering more more chemistry courses at Norco College.

What are your plans/goals (3-year) regarding this goal?

By adding additional chemistry laboratory facilities, and modifying the lab space that we currently have, we will be able to offer more chemistry courses at Norco College.

Chemistry courses support the growth of other science disciplines, therefore more chemistry courses are needed to support their growth as well as ours.

Increasing chemistry courses will enable these students to finish all of their courses at Norco College.

EVIDENCE

Do you have assessment data or other evidence that relates to this goal?

As Norco College continues to grow, additional chemistry courses will be needed to meet the demand of students.

RESOURCES

Is there a resource request associated with this EMP Goal? (If yes, please complete a Resource Request, which you can access from the main menu to the left)

Yes

Program Review Part 2

2021 - 2024

Curriculum

Are all your courses current (within four years)?
Yes
What percentage of your courses are out of date?
0%
If you have courses that are not current, are they in the curriculum process?
N/A
For out of date courses that are not already in progress of updating, what is your plan?
N/A

Do you have proposals in progress for all the DE courses you intend to file?
No
Do you require help to get your courses up to date?
No

Program Review Reflections

What would make program review meaningful and relevant for your unit?

1. under resource requests, place the question for what is needed first, then the question for what the discipline currently has second
2. descriptions of all funding sources are needed
3. under resource requests, under "The evidence to support this request can be found in:" another option is needed to add additional information from the discipline to justify the need for the item(s)

What questions do we need to ask to understand your program plans, goals, needs?
N/A
What types of data do you need to support your program plans, goals, needs?
transfer data to 4 year colleges/universities (percent of students in a major and in a discipline)
If there are any supporting documents you would like to attach, please attach them here.

Resource Requests

2022 - 2023 Update

Resource Request

What resources do we already have?
Outdated lab curriculum, based on 1992 lab textbook
What resources do you need?
New, updated lab curriculum
Request related to EMP goal or Assessment?
EMP Goal 1,EMP Goal 3,EMP Goal 5
$ Amount Requested
5,000
Resource Type
ITEM: Equipment, Services, Software, Furniture
Potential Funding Source(s)
Other/None
The evidence to support this request can be found in:
Program Review: Part 1
This request for my area is Priority #:
5
Is this request:
New

For Administrative Use Only

Funding Status

Notes

2021 - 2024

Resource Request

What resources do we already have?
our current acid storage cabinets are full and some need to be replaced due to corrosion/up to code
What resources do you need?
acid storage cabinet
Request related to EMP goal or Assessment?
EMP Goal 1,EMP Goal 5,EMP Goal 2,EMP Goal 3,EMP Goal 6,EMP Goal 7,EMP Goal 9,EMP Goal 10
$ Amount Requested
2,000
Resource Type
ITEM: Equipment, Technology, Services, Software, Furniture

Resource Requests

Potential Funding Source(s)
Lottery Instructional Supplies,General Fund
The evidence to support this request can be found in:
Program Review: Part 1,Data Review
This request for my area is Priority #:
2

For Administrative Use Only

Funding Status
In Progress
Notes
Approved

2021 - 2024

Resource Request

What resources do we already have?
currently have 5
What resources do you need?
Gilson Micropipettes for Organic Chemistry Lab (need six more)
Request related to EMP goal or Assessment?
EMP Goal 1,EMP Goal 5,EMP Goal 2,EMP Goal 3,EMP Goal 6,EMP Goal 7,EMP Goal 9,EMP Goal 10
$ Amount Requested
2,100
Resource Type
ITEM: Instructional supplies
Potential Funding Source(s)
Instructional Equipment Allocation,Lottery Instructional Supplies
The evidence to support this request can be found in:
Program Review: Part 1,Data Review
This request for my area is Priority #:
5

For Administrative Use Only

Funding Status
In Progress
Notes
Approved

Resource Requests

2021 - 2024

Resource Request

What resources do we already have?
none
What resources do you need?
Polarimeter
Request related to EMP goal or Assessment?
EMP Goal 1,EMP Goal 5,EMP Goal 2,EMP Goal 3,EMP Goal 6,EMP Goal 7,EMP Goal 9,EMP Goal 10
$ Amount Requested
11,000
Resource Type
ITEM: Instructional supplies
Potential Funding Source(s)
Lottery Instructional Supplies,Instructional Equipment Allocation
The evidence to support this request can be found in:
Program Review: Part 1,Data Review
This request for my area is Priority #:
14

For Administrative Use Only

Funding Status
No Action-Insufficient funding
Notes
Forwarded to VPAA for funding consideration

2021 - 2024

Resource Request

What resources do we already have?
one Infrared Spectrometer (IR) instrument
What resources do you need?
an additional IR instrument
Request related to EMP goal or Assessment?
EMP Goal 1,EMP Goal 5,EMP Goal 2,EMP Goal 3,EMP Goal 6,EMP Goal 7,EMP Goal 9,EMP Goal 10
$ Amount Requested
25,000
Resource Type
ITEM: Instructional supplies
Potential Funding Source(s)
Instructional Equipment Allocation,Lottery Instructional Supplies
The evidence to support this request can be found in:
Program Review: Part 1,Data Review

Resource Requests

This request for my area is Priority #:
15

For Administrative Use Only

Funding Status
No Action-Insufficient funding
Notes
Forwarded to VPAA for funding consideration

2021 - 2024

Resource Request

What resources do we already have?
ACS Exam For Organic Chem (3 older versions for 12A and 2 older versions of 12B)
What resources do you need?
ACS Exam for Organic Chem (need current version) and for General Chemistry 1A and 1B
Request related to EMP goal or Assessment?
EMP Goal 1,EMP Goal 5,EMP Goal 2,EMP Goal 3,EMP Goal 6,EMP Goal 7,EMP Goal 9,EMP Goal 10
$ Amount Requested
300
Resource Type
ITEM: Instructional supplies
Potential Funding Source(s)
Lottery Instructional Supplies,Instructional Equipment Allocation
The evidence to support this request can be found in:
Program Review: Part 1,Assessment Review,Data Review
This request for my area is Priority #:
18

For Administrative Use Only

Funding Status
In Progress
Notes
Approved

2021 - 2024

Resource Request

What resources do we already have?
none
What resources do you need?
heating mantles and power supply (20 are needed at $650 for each)

Resource Requests

Request related to EMP goal or Assessment?
EMP Goal 1,EMP Goal 5,EMP Goal 2,EMP Goal 3,EMP Goal 6,EMP Goal 7,EMP Goal 9,EMP Goal 10
$ Amount Requested
13,000
Resource Type
ITEM: Instructional supplies
Potential Funding Source(s)
Lottery Instructional Supplies,Instructional Equipment Allocation
The evidence to support this request can be found in:
Program Review: Part 1,Data Review
This request for my area is Priority #:
4

For Administrative Use Only

Funding Status
In Progress
Notes
Approved

2021 - 2024

Resource Request

What resources do we already have?
none
What resources do you need?
KBr pellet press
Request related to EMP goal or Assessment?
EMP Goal 1,EMP Goal 5,EMP Goal 2,EMP Goal 3,EMP Goal 6,EMP Goal 7,EMP Goal 9,EMP Goal 10
$ Amount Requested
5,000
Resource Type
ITEM: Instructional supplies
Potential Funding Source(s)
Lottery Instructional Supplies,Instructional Equipment Allocation
The evidence to support this request can be found in:
Program Review: Part 1,Data Review
This request for my area is Priority #:
13

For Administrative Use Only

Funding Status
In Progress
Notes
Approved

Resource Requests

2021 - 2024

Resource Request

What resources do we already have?
none
What resources do you need?
Lab Jacks (20 at $400 each)
Request related to EMP goal or Assessment?
EMP Goal 1,EMP Goal 5,EMP Goal 2,EMP Goal 3,EMP Goal 6,EMP Goal 7,EMP Goal 9,EMP Goal 10
$ Amount Requested
8,000
Resource Type
ITEM: Instructional supplies
Potential Funding Source(s)
Instructional Equipment Allocation,Lottery Instructional Supplies
The evidence to support this request can be found in:
Data Review,Program Review: Part 1
This request for my area is Priority #:
7

For Administrative Use Only

Funding Status
In Progress
Notes
Approved

2021 - 2024

Resource Request

What resources do we already have?
library currently has subscription but the discipline is unsure if it will continue the subscription
What resources do you need?
renew library subscription to Journal of Chemical Education
Request related to EMP goal or Assessment?
EMP Goal 1,EMP Goal 5,EMP Goal 2,EMP Goal 3,EMP Goal 7,EMP Goal 9
$ Amount Requested
800
Resource Type
ITEM: Instructional supplies
Potential Funding Source(s)
Lottery Instructional Supplies
The evidence to support this request can be found in:
Data Review,Program Review: Part 1

Resource Requests

This request for my area is Priority #:
17

For Administrative Use Only

Funding Status
Completed/Funded
Notes
Completed

2021 - 2024

Resource Request

What resources do we already have?
Current reverse osmosis water system for deionized water to run all chemistry labs is operable but is no longer being supported by the vendor.
What resources do you need?
A replacement reverse osmosis water system for deionized water to run all chemistry labs is required or we will be unable to run any chemistry labs.
Request related to EMP goal or Assessment?
EMP Goal 1,EMP Goal 5,EMP Goal 2,EMP Goal 3,EMP Goal 6,EMP Goal 7,EMP Goal 9,EMP Goal 10
$ Amount Requested
40,000
Resource Type
ITEM: Equipment, Technology, Services, Software, Furniture
Potential Funding Source(s)
Lottery Instructional Supplies
The evidence to support this request can be found in:
Data Review,Program Review: Part 1
This request for my area is Priority #:
1

For Administrative Use Only

Funding Status
In Progress
Notes
Approved

2021 - 2024

Resource Request

What resources do we already have?
We currently have 2 Gas Chromatographs (GC) but supplies are needed to maintain and run experiments

Resource Requests

What resources do you need?
Supplies to run instrumentation GC (gases, septa, syringes, aluminum tubing, fittings, ferrules, regulators (two stage and inline), columns, traps for gas lines (moisture and organics), vials for autosampler), demurrage charges on gases)
Request related to EMP goal or Assessment?
EMP Goal 1,EMP Goal 5,EMP Goal 2,EMP Goal 3,EMP Goal 6,EMP Goal 7,EMP Goal 10,EMP Goal 9
$ Amount Requested
6,000
Resource Type
ITEM: Instructional supplies
Potential Funding Source(s)
Lottery Instructional Supplies,Instructional Equipment Allocation
The evidence to support this request can be found in:
Data Review,Program Review: Part 1
This request for my area is Priority #:
3

For Administrative Use Only

Funding Status
In Progress
Notes
Approved

2021 - 2024

Resource Request

What resources do we already have?
Recently purchased Nuclear Magnetic Resonance (NMR) instrument with no supplies
What resources do you need?
Supplies (chemicals and equipment) for NMR instrument
Request related to EMP goal or Assessment?
EMP Goal 1,EMP Goal 5,EMP Goal 2,EMP Goal 3,EMP Goal 6,EMP Goal 7,EMP Goal 9,EMP Goal 10
$ Amount Requested
1,500
Resource Type
ITEM: Instructional supplies
Potential Funding Source(s)
Lottery Instructional Supplies,Instructional Equipment Allocation
The evidence to support this request can be found in:
Data Review,Program Review: Part 1
This request for my area is Priority #:
23

Resource Requests

For Administrative Use Only

Funding Status
In Progress
Notes
Approved

2021 - 2024

Resource Request

What resources do we already have?
Journal of Visualized Experiments (JoVE) - current subscription will be expiring and are unsure of future support
What resources do you need?
Renew JoVE subscription
Request related to EMP goal or Assessment?
EMP Goal 1,EMP Goal 5,EMP Goal 3,EMP Goal 2,EMP Goal 7,EMP Goal 6,EMP Goal 9,EMP Goal 10
$ Amount Requested
2,000
Resource Type
ITEM: Instructional supplies
Potential Funding Source(s)
Lottery Instructional Supplies
The evidence to support this request can be found in:
Data Review
This request for my area is Priority #:
22

For Administrative Use Only

Funding Status
Completed/Funded
Notes
NA

2021 - 2024

Resource Request

What resources do we already have?
Chemistry lab tech (1 full-time and 1 part-time)
What resources do you need?
Replacement for full-time Chemistry Lab Tech
Request related to EMP goal or Assessment?
EMP Goal 1,EMP Goal 5,EMP Goal 2,EMP Goal 3,EMP Goal 9

Resource Requests

$ Amount Requested
100,000
Resource Type
STAFF: Classified Professional, Confidential, Manager
Potential Funding Source(s)
Other/None,General Fund
The evidence to support this request can be found in:
Data Review,Program Review: Part 1
This request for my area is Priority #:
26

For Administrative Use Only

Funding Status
Completed/Funded
Notes
Forwarded to Executive Cabinet for funding Consideration?

2021 - 2024

Resource Request

What resources do we already have?
4 Full-time faculty
What resources do you need?
additional faculty member needed to address growth in chemistry courses and to cover our current course offerings ($150,000 per year)
Request related to EMP goal or Assessment?
EMP Goal 1,EMP Goal 5,EMP Goal 2,EMP Goal 3,EMP Goal 6,EMP Goal 7,EMP Goal 9,EMP Goal 10
$ Amount Requested
150,000
Resource Type
FACULTY: New Full time Faculty (Associate faculty requested through Dept. Chair and Dean)
Potential Funding Source(s)
Other/None,General Fund
The evidence to support this request can be found in:
Data Review,Program Review: Part 1
This request for my area is Priority #:
25

For Administrative Use Only

Funding Status
In Progress
Notes
Delayed for hire to start Fall 2023

Resource Requests

2021 - 2024

Resource Request

What resources do we already have?
one projection system and screen in HUM 204
What resources do you need?
additional projection system/SMART classroom and screen in HUM 204 is needed for all students to be able to see course content during instruction (about half the students in class can see the course content projected from the existing one projector).
Request related to EMP goal or Assessment?
EMP Goal 1,EMP Goal 5,EMP Goal 2,EMP Goal 3,EMP Goal 6,EMP Goal 7,EMP Goal 9,EMP Goal 10
$ Amount Requested
5,000
Resource Type
ITEM: Equipment, Technology, Services, Software, Furniture
Potential Funding Source(s)
General Fund,Other/None
The evidence to support this request can be found in:
Data Review,Program Review: Part 1
This request for my area is Priority #:
6

For Administrative Use Only

Funding Status
In Progress
Notes
HEERF

2021 - 2024

Resource Request

What resources do we already have?
2 lab rooms to run all 20 sections of chemistry courses
What resources do you need?
additional lab space (renovate existing space)
Request related to EMP goal or Assessment?
EMP Goal 1,EMP Goal 5,EMP Goal 2,EMP Goal 3,EMP Goal 9,EMP Goal 10
$ Amount Requested
500,000
Resource Type
BUDGET: Facilities Building, Remodel
Potential Funding Source(s)
General Fund,Other/None

Resource Requests

The evidence to support this request can be found in:
Data Review,Program Review: Part 1
This request for my area is Priority #:
24

For Administrative Use Only

Funding Status
No Action-Insufficient funding
Notes
Forwarded to VPAA for funding consideration

2021 - 2024

Resource Request

What resources do we already have?
none
What resources do you need?
Vigreaux Columns (25 at $150 each)
Request related to EMP goal or Assessment?
EMP Goal 1,EMP Goal 2,EMP Goal 3,EMP Goal 5,EMP Goal 6,EMP Goal 7,EMP Goal 9,EMP Goal 10
$ Amount Requested
3,750
Resource Type
ITEM: Instructional supplies
Potential Funding Source(s)
Lottery Instructional Supplies,General Fund
The evidence to support this request can be found in:
Data Review,Program Review: Part 1
This request for my area is Priority #:
9

For Administrative Use Only

Funding Status
In Progress
Notes
Approved

2021 - 2024

Resource Request

What resources do we already have?
20 Thermistors

Resource Requests

What resources do you need?
14 more thermistors ($50 each)
Request related to EMP goal or Assessment?
EMP Goal 1,EMP Goal 2,EMP Goal 3,EMP Goal 5,EMP Goal 6,EMP Goal 7,EMP Goal 9,EMP Goal 10
$ Amount Requested
700
Resource Type
ITEM: Instructional supplies
Potential Funding Source(s)
Lottery Instructional Supplies,Instructional Equipment Allocation
The evidence to support this request can be found in:
Data Review,Program Review: Part 1
This request for my area is Priority #:
11

For Administrative Use Only

Funding Status
In Progress
Notes
Approved

2021 - 2024

Resource Request

What resources do we already have?
17 gas pressure probes
What resources do you need?
17 more gas pressure probes
Request related to EMP goal or Assessment?
EMP Goal 1,EMP Goal 2,EMP Goal 3,EMP Goal 5,EMP Goal 6,EMP Goal 7,EMP Goal 9,EMP Goal 10
$ Amount Requested
1,700
Resource Type
ITEM: Instructional supplies
Potential Funding Source(s)
Lottery Instructional Supplies,Instructional Equipment Allocation
The evidence to support this request can be found in:
Data Review,Program Review: Part 1
This request for my area is Priority #:
10

For Administrative Use Only

Funding Status
In Progress

Resource Requests

Notes
Approved

2021 - 2024

Resource Request

What resources do we already have?
28 hot plate/stirrers
What resources do you need?
12 hot plate/stirrers ($550 each)
Request related to EMP goal or Assessment?
EMP Goal 1,EMP Goal 2,EMP Goal 3,EMP Goal 5,EMP Goal 6,EMP Goal 7,EMP Goal 9,EMP Goal 10
$ Amount Requested
6,600
Resource Type
ITEM: Instructional supplies
Potential Funding Source(s)
Lottery Instructional Supplies,General Fund
The evidence to support this request can be found in:
Data Review,Program Review: Part 1
This request for my area is Priority #:
8

For Administrative Use Only

Funding Status
In Progress
Notes
Approved

2021 - 2024

Resource Request

What resources do we already have?
LabQuests (30)
What resources do you need?
6 more Lab Quests ($375)
Request related to EMP goal or Assessment?
EMP Goal 1,EMP Goal 2,EMP Goal 3,EMP Goal 5,EMP Goal 7,EMP Goal 6,EMP Goal 9,EMP Goal 10
$ Amount Requested
2,250
Resource Type
ITEM: Instructional supplies
Potential Funding Source(s)
Lottery Instructional Supplies

Resource Requests

The evidence to support this request can be found in:
Data Review,Program Review: Part 1
This request for my area is Priority #:
16

For Administrative Use Only

Funding Status
In Progress
Notes
Approved

2021 - 2024

Resource Request

What resources do we already have?
bench space for instrumentation
What resources do you need?
add bench space for placement of new instrumentation (NMR, Gas Chromatographs, IR, etc.) for General and Organic Chemistry Labs and storage cabinets for storing instrument equipment and supplies
Request related to EMP goal or Assessment?
EMP Goal 1,EMP Goal 2,EMP Goal 3,EMP Goal 5,EMP Goal 6,EMP Goal 7,EMP Goal 9,EMP Goal 10
$ Amount Requested
15,000
Resource Type
BUDGET: Facilities Building, Remodel
Potential Funding Source(s)
Lottery Instructional Supplies,General Fund
The evidence to support this request can be found in:
Data Review,Program Review: Part 1
This request for my area is Priority #:
12

For Administrative Use Only

Funding Status
No Action-Insufficient funding
Notes
Forwarded to VPAA for funding consideration

Resource Requests

2021 - 2024

Resource Request

What resources do we already have?
ChemDraw (older version not currently compatible with current software)
What resources do you need?
3 years - Upgrade ChemDraw to be compatible with current computer software ($2500 per faculty for software/upgrades/maintenance fee for 4 faculty)
Request related to EMP goal or Assessment?
EMP Goal 6,EMP Goal 9
$ Amount Requested
7,500
Resource Type
ITEM: Instructional supplies
Potential Funding Source(s)
Lottery Instructional Supplies,General Fund
The evidence to support this request can be found in:
Data Review,Program Review: Part 1
This request for my area is Priority #:
20

For Administrative Use Only

Funding Status
Completed/Funded
Notes
Completed

2021 - 2024

Resource Request

What resources do we already have?
older Mac computers for 2 faculty
What resources do you need?
2 new 24" Mac computers ($1500 each)
Request related to EMP goal or Assessment?
EMP Goal 9,EMP Goal 6
$ Amount Requested
3,000
Resource Type
ITEM: Instructional supplies
Potential Funding Source(s)
General Fund,Lottery Instructional Supplies

Resource Requests

The evidence to support this request can be found in:
Data Review,Program Review: Part 1
This request for my area is Priority #:
19

For Administrative Use Only

Funding Status
Completed/Funded
Notes
Completed

2021 - 2024

Resource Request

What resources do we already have?
Faculty Professional Development funding
What resources do you need?
Continued support for funding faculty to attend conferences and meetings ($2000 each for 3 faculty members per year for three years and $2000 for 4 faculty for 2 years)
Request related to EMP goal or Assessment?
EMP Goal 5,EMP Goal 2,EMP Goal 3,EMP Goal 6,EMP Goal 7,EMP Goal 9
$ Amount Requested
22,000
Resource Type
BUDGET: Request Ongoing Funding (Professional Development, Department or Program Support, Outreach, Marketing)
Potential Funding Source(s)
Equity,General Fund
The evidence to support this request can be found in:
Data Review,Program Review: Part 1
This request for my area is Priority #:
21

For Administrative Use Only

Funding Status
No Action-Insufficient funding
Notes
Forwarded to PDC for funding consideration

Submission

2021 - 2024

All parts of my Program Review have been completed and it is ready for review
Yes

2022 - 2023 Update

I would like to submit this update
Yes
The additions or updates to my Program Review can be found in:
Resource Requests