

**HAWAI'I COMMUNITY COLLEGE
PROGRAM ANNUAL REVIEW REPORT**

[AS in Natural Science]

Date 15 February 2017

Review Period
July 1, 2015 to June 30, 2016

Initiator: [insert Initiator's Name here]

Writer(s): [Pamela Y. Scheffler, Ruria Namba, Roberta Brashear-Kaulfers, Bernhard Laurich,
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Program/Unit Review at Hawai'i Community College is a shared governance responsibility related to strategic planning and quality assurance. Annual and 3-year Comprehensive Reviews are important planning tools for the College's budget process. This ongoing systematic assessment process supports achievement of Program/Unit and Institutional Outcomes. Evaluated through a college-wide procedure, all completed Program/Unit Reviews are available to the College and community at large to enhance communication and public accountability. Please see <http://hawaii.hawaii.edu/files/program-unit-review/>

Please remember that this review should be written in a professional manner. Mahalo.

PROGRAM DESCRIPTION

| Describe the Program | |
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| Provide the short description as listed in the current catalog. | This Associate in Science Degree program prepares students to transfer to 4-year institutions in STEM (Science, Technology, Engineering and Mathematics) related fields. Hawaii Community College offers two ASNS tracks: Biological Science and Physical Science. For more information, contact Laura Brezinsky by email (laura@hawaii.edu). |
| Provide and discuss the program’s mission (or goals and objectives if no program mission statement is available). | The proposed new A.S. degree in Natural Science (AS-NS) with concentrations in Biological Science or Physical Science at Hawaii Community College (HawCC) will prepare students to transfer to baccalaureate STEM (Science, Technology, Engineering and Mathematics) programs with a recognized and supported pathway. The degree will allow Hawaii Community College to better serve STEM students, as well as align our college’s degree offerings with those of the other community college campuses. |

Comprehensive Review information: Required for ARPD Web Submission

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| Provide the year and URL for the location of this program’s last Comprehensive Review on the HawCC Program/Unit Review website: http://hawaii.hawaii.edu/files/program-unit-review/ | |
| Year | n/a: NSCI is a new program and does not have a previous Comprehensive Review |
| URL | |
| Provide a short summary regarding the last | |

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| <p>Comprehensive Review for this program. Discuss any significant changes to the program since the last Comprehensive Review that are not discussed elsewhere in this review.</p> | |
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QUANTITATIVE INDICATORS

ARPD Data

Please attach a copy of the program’s ARPD data tables and submit with the Program Review document.

a) **If you will be submitting the Program Review document in hard copy, print and staple a copy of the data tables to the submission; the icon to print the data tables is on the upper right side, just above the data tables.**

OR

b) **If you will be submitting the Program Review document in digital form, attach a PDF copy of the data tables along with the digital submission; the icon to download the data tables as a PDF is in the upper right side, just above the data tables.**

Program data can be found on the ARPD website: <http://www.hawaii.edu/offices/cc/arpd/>

ANALYSIS OF THE PROGRAM’S DATA

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| <p>Analyze the program’s ARPD data for the review period.</p> | |
| <p>Describe, discuss, and provide context for the data, including the program’s health scores in the following categories:</p> | |
| <p>Demand</p> | <p>Demand is listed as “unhealthy.” However, the data are flawed. Demand health is based on the “percent change in majors.” The number of majors increased from 23 to 41 (a 78% increase) but the ARPD has it as a 0% increase. Despite the unhealthy call in this indicator, we feel that the continuing increase in majors over the time of the program is indicative of a</p> |

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| | healthy program. |
| Efficiency | Efficiency is listed as “Cautionary.” Too many majors per faculty. We need a chemistry position. |
| Effectiveness | Effectiveness is listed as “Cautionary.” There is only a 54.5% persistence from fall to spring. We believe that this is due to regular attrition at the College and related to financial aid issues. We know of several students who were unable to continue because they could no longer afford tuition. We also think there may be students who are registering as the wrong major. |
| Overall Health | Overall health is listed as “Cautionary.” See above. |
| Distance Education | The only course that is taught distance education is our vidcon Calculus class. It was a highly successful offering with a high fill rate (93%) and low drop rate (1 student) |
| Perkins Core Indicators (if applicable) | n/a |
| Performance Funding Indicators (if applicable) | n/a |
| Describe any trends, and any internal and/or external factors that are relevant to understanding the | Overall College enrollment has decreased, however, the number of NSCI majors continues to increase. Demand for this program is strong despite external factors. We are unable to offer all the courses required for the major because we lack the facilities and the faculty to teach the courses. We do not have a Physics lab |

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| program's data. | space and are unable to offer either of the required physics courses. All of the required chemistry courses are presently taught by a lecturer rather than a full-time faculty, leading to potential instability in the program. |
| Discuss other strengths and challenges of the program that are relevant to understanding the program's data. | <p>We are unable to offer all the courses required for the major because we lack the facilities and the faculty to teach the courses. We do not have a Physics lab space and are unable to offer either of the required physics courses. All of the required chemistry courses are presently taught by a lecturer rather than a full-time faculty, leading to potential instability in the program.</p> <p>Students are enrolling as majors with very low preparation in mathematics. These students are more likely to withdraw from the major without a degree if they cannot achieve the high mathematics standards required in the program. If they do persist, they may have many semesters of remedial mathematics (up to 3.5 years) before they reach the level of the program requirements.</p> |

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| Analyze the program's IRO data for the year under review. Discuss how data/analysis provided by the Institutional Research Office has been used for program improvement. (For example, how results from CCSSE or IRO research requests have impacted program development.) | |
| Describe, discuss, and provide context for the data. | n/a: Did not request data |
| Discuss changes made as a result of the IRO data. | n/a |

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| Report and discuss all major/meaningful actions and activities that occurred in the program during the review period. For example: | |
| Changes to the program's curriculum | This is a young program and we are still in the process of adding courses for our students that are taught on our campus. Up until Fall |

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| <p>due to course additions, deletions, modifications (CRC, Fast Track, GE-designations), and re-sequencing</p> | <p>2015, we did not have the ability to offer majors biology, chemistry, or physics on our campus and relied on UH Hilo to set aside seats in their courses for our students. In Fall 2015, we filled BIOL 171 and 171L for the first time on our campus. BIOL 172 and 172L filled for the first time in Spring 2016. We plan to offer CHEM 161, 161L, CHEM 162 and CHEM 162 in the upcoming year and PHYS 170, 170L, 171, and 171L when funding becomes available to create a physics lab.</p> |
| <p>New certificates/degrees</p> | <p>n/a</p> |
| <p>Personnel and position additions and/or losses.</p> | <p>n/a</p> |
| <p>Other major/meaningful activities, including responses to previous CERC feedback.</p> | |

| Describe, analyze, and celebrate the program's successes and accomplishments. (For example, <i>more students were retained/graduated</i> OR <i>the program successfully integrated new strategies/technologies.</i>) | |
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| <p>Discuss what the program has been doing well. Are there areas that needs to be maintained and strengthened?</p> <p>Please provide evidence if applicable (ex: program data reports, relevant URL links, etc.).</p> | <p>We offered BIOL 171 and 171L on our campus in Fall 2015 and BIOL 172 and 172L in Spring 2016. We began planning for offering CHEM 161 and 161L and CHEM 162 and 162L in the next academic year. We have continued to recruit and engage students in the program and have almost doubled our student enrollment for the second consecutive year. This has allowed us to stop relying on the two seats in BIOL 171/L and 172/L that were being held for us by UH Hilo and provide needed courses for the majority of our student majors.</p> |
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| Describe, analyze, and discuss any challenges and/or obstacles the program has faced. | |
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| <p>Identify and discuss the program's challenges/obstacles.</p> | <p>We have severe challenges with lack of faculty, lack of laboratory space, and lack of funding for providing laboratory materials. We are the only UHCC without a</p> |

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| | <p>tenure-track Chemistry faculty member. At present, our chemistry courses are being taught by a lecturer and by our physics faculty. Our labs are hampered by an inability to purchase all of the desired supplies and equipment and faculty need to use creativity to teach without a full set of supplies.</p> <p>Palamanui campus was built and opened but the biology and chemistry laboratories were not certified and courses could not be taught on campus.</p> |
| <p>Discuss changes and actions taken to address those challenges, and any results of those actions.</p> | <p>We have approached UHH to request use of their physics lab but the request was not granted. We have approached the Hawaii CC administration to request space and funding for a physics lab at the Manono and Palamanui campuses. We have approached the lecturer in Chemistry to develop curriculum and teach CHEM 161, 161L, 162, and 162L in the 2016-17 year at the Manono campus.</p> <p>Work on Palamanui biology and chemistry laboratories continued through the year. We created agreements with NELHA to use their lab space so that biology courses could be offered at Palamanui during the lab preparation period. More work is planned for the 2016-17 year and we will have the labs certified and usable by Spring 2017.</p> |
| <p>Discuss what still needs to be done in order to successfully meet and overcome these challenges.</p> | <p>We need a physics lab on both campuses. In addition, we need funds to purchase the equipment and supplies to run PHYS 170L and 171L.</p> <p>We require a full-time chemistry professor.</p> <p>We need more departmental funds to purchase laboratory equipment and supplies so that we can offer full biology and</p> |

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| | chemistry labs. |
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PROGRAM ACTION PLAN

| Discuss the program's prior year's (AY14-15) action plan and results. | |
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| Describe the program's action plan from the prior review period and discuss how it was implemented in AY15-16. | <ol style="list-style-type: none"> 1. Investigate funding for additional facilities to create an independent program. Needed facilities include additional classroom space, Chemistry, Physics and Biology labs and equipment 2. Investigate funding for additional faculty to create an independent program. Faculty positions needed include at least one physics instructor, one chemistry instructor and possibly one biology instructor. |
| Discuss the results of the action plan and the program's success in achieving its goals. | <ol style="list-style-type: none"> 1. Discussions about creating labs were begun. No lab space was available 2. Additional faculty members were not possible to bring to the program. |
| Discuss any challenges the program had in implementing that action plan or achieving its goals. | <ol style="list-style-type: none"> 1. The items needed are large and were not possible to provide 2. New faculty positions were not created. |

- Did the program review its website during AY15-16? Please check the box below that applies.

Reviewed website, no changes needed.

Reviewed website and submitted change request to webmaster on _____(date)_____.

X Reviewed website and will submit change request to webmaster.

NOTE: The program does not have a website.

Please note that requests for revisions to program websites must be submitted directly to the College's webmaster at <http://hawaii.hawaii.edu/web-developer>

| <p>Discuss the program's overall action plan for AY16-17, based on analysis of the Program's data and the overall results of course assessments of student learning outcomes conducted during the AY15-16 review period.</p> | <p>Benchmarks and Timelines for implementation and achievement of goals.</p> |
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| <p>Action Goal 1: Advocate for the development of a physics lab at both Manono and Palamanui</p> | <p>Benchmarks/Timelines: Continued discussions until lab is complete</p> |
| <p>How can this action Goal lead to improvements in student learning and attainment of the program's learning outcomes (PLOs)?</p> <p>PHYS 170/L and 171/L are required for our majors but cannot be offered through Hawaii CC until lab space is created.</p> <p>The ability to offer physics labs on our campuses will address all four PLO:</p> <p>NSCI PLO1: Analyze data effectively using current technology. NSCI PLO2: Communicate scientific ideas and principles clearly and effectively. NSCI PLO3: Analyze and apply fundamental mathematical, physical, and chemical concepts and techniques to scientific issues NSCI PLO4: Apply fundamental concepts and techniques in their chosen concentration.</p> <p>Students will have the opportunity to use current technology, write lab reports on their experiences, analyze data and apply concepts and techniques in physics.</p> | |

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| <p>Action Goal 2: Advocate for the permanent confirmation of a chemistry instructor</p> | <p>Benchmarks/Timelines: Continued discussions until personnel are hired</p> |
| <p>How can this action Goal lead to improvements in student learning and attainment of the program's learning outcomes (PLOs)?</p> <p>CHEM 161/L and 162/L are required for our majors but we have to rely on lecturers to teach these required courses, which leads to uncertainty on the ability to offer them in future years.</p> <p>The ability to continuously offer chemistry and chemistry labs on our campuses will address all four PLO:</p> <p>NSCI PLO1: Analyze data effectively using current technology. NSCI PLO2: Communicate scientific ideas and principles clearly and effectively. NSCI PLO3: Analyze and apply fundamental mathematical, physical, and chemical concepts and techniques to scientific issues NSCI PLO4: Apply fundamental concepts and techniques in their chosen concentration.</p> <p>Students will have the opportunity to use current technology, write lab reports on their experiences, analyze data and apply concepts and techniques in chemistry.</p> | |
| <p>Action Goal 3: Certify the biology and chemistry labs at Palamanui</p> | <p>Benchmarks/Timelines: Fall 2016</p> |

How can this action Goal lead to improvements in student learning and attainment of the program's learning outcomes (PLOs)?

Biology and Chemistry are required courses but cannot be taught at the Palamanui campus due to lack of certified lab space

The ability to offer biology and chemistry labs at the Palamanui campus will address all four PLO:

NSCI PLO1: Analyze data effectively using current technology.

NSCI PLO2: Communicate scientific ideas and principles clearly and effectively.

NSCI PLO3: Analyze and apply fundamental mathematical, physical, and chemical concepts and techniques to scientific issues

NSCI PLO4: Apply fundamental concepts and techniques in their chosen concentration.

Students will have the opportunity to use current technology, write lab reports on their experiences, analyze data and apply concepts and techniques in biology and chemistry.

RESOURCE IMPLICATIONS

NOTE: General budget asks are included in the 3-year Comprehensive Review. Budget asks for the following categories only may be included in the Annual review: health and safety needs, emergency needs, and/or necessary needs to become compliant with Federal/State laws/regulations.

Please provide a brief statement about any implications of or challenges with the program's current operating resources.

Until we have all of the lab facilities and resources and qualified faculty, we cannot provide the courses needed for our students to graduate.

In order to make the entire degree program and its courses available to Hawaii Community College students, we hope to increase the number of courses that we offer for the ASNS in upcoming years - specifically, CHEM161/162, PHYS171/172, and the requisite lab courses for both. Currently, unlike UHH, the community colleges do not/ are not able to charge their students for laboratory fees, and therefore, our lab supplies must come from our currently available budget. Labs supplies are increasingly expensive, involve perishable and consumable supplies and when new classes are added, the procurement of laboratory supplies is more expensive than it would be to maintain afterward, when we are simply replacing supplies. Much of our budget is spent on running labs that are designed for students outside of the NSCI degree (e.g., pre-nursing), leaving little funding for purchasing laboratory supplies for the courses required for the major. Therefore, when we add new courses, it is at the expense of shorting other. In particular, in order to fully implement the ASNat Sci program HawCC needs to offer Phys 170L (which is required for the physical and the biological track) and Phys 171L (as co-requisites to Phys 170 and Phys 171). This requires faculty, facility and equipment for East Hawaii and West Hawaii. The largest expense will be in creating the physics lab facility but the cost of running a laboratory is also not trivial (for example, phasing in a Laboratory for Phys 170L for 12 students working in groups of 2, would require an equipment cost of approximately \$36,000 per semester per campus. A full lab (20 students) would cost approximately \$60,000 in equipment and supplies per campus).

We are also unable to run a full schedule of courses because the Biology BSL-2 laboratory does not have a prep room. Lab courses require set-up and take-down of materials for each lab run, as well as the production of chemical solutions, cultures, culture media, and other supplies. Because there is not a dedicated space for this, our lab coordinator must do this in between scheduled labs and labs must be scheduled with longer breaks between them in order to accommodate this use of the space. If we had a prep-room for the lab, we would be able to schedule more labs in the space and accommodate the needs of more students.

The department would be improved if we could supply modern equipment to modernize the experiments we offer. Moving from preserved specimens to reusable models would be a large initial expense but would decrease costs over the long term. We could improve our teaching by providing laptops or ipads in the lab so that students can use them as lab tools for data collection, data mining, online research and simulation. In this way our labs would be modernized and students would be closer to learning to use the tools they will be using in their future places of employment.

In addition, staying current in our field of expertise is particularly important for science faculty.

All fields of science (biology, chemistry and physics) are continually changing and it is important for faculty to remain on top of new developments so that they can impart this knowledge to students. Professional development, including membership in at least one professional organization and participation in at least one professional conference annually in the faculty's field of expertise, should be encouraged and funded through the college.

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| For budget asks in the allowed categories (see above): | |
| Describe the needed item(s) in detail. | n/a |
| Include estimated cost(s) and timeline(s) for procurement. | n/a |
| Explain how the item(s) aligns with one or more of the strategic initiatives of <u>2015-2021 Strategic Directions</u> . | n/a |

<http://hawaii.hawaii.edu/sites/default/files/docs/strategic-plan/hawcc-strategic-directions-2015-2021.pdf>

LEARNING OUTCOMES ASSESSMENT

For all parts of this section, please provide information based on CLO (course learning outcomes) assessments conducted in AY 2015-16, and information on the aligned (PLOs) program learning outcomes assessed through those course assessments.

If applicable, please also include information about any PLO assessment projects voluntarily conducted by the program's faculty/staff.

Evidence of Industry Validation and Participation in Assessment (for CTE programs only)

Provide documentation that the Program has submitted evidence and achieved certification or accreditation from an organization granting certification in an industry or profession. If the program/degree/certificate does not have a certifying body, you may submit evidence of the program's advisory committee's/board's recommendations for, approval of, and/or participation

in assessment(s). **Please attach copy of industry validation for the year under review and submit with the document.**

Courses Assessed

- List all program courses assessed during AY 2015-16, including those courses for which a follow-up “Closing the Loop” assessment was implemented during the review year.

| Assessed Course Alpha, No., & Title | Semester assessed | CLOs assessed (CLO# & text) | CLO-to-PLO alignment (aligned PLO# & text) |
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| No courses were assessed in 2015-16. In 2015-16, all Program courses were taught through UH Hilo and not taught on our campus or through our faculty. | | | |
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| “Closing the Loop” | Semester | CLOs assessed | CLO-to-PLO |

| Assessments Alpha, No., & Title | assessed | (CLO# & text) | alignment (aligned PLO# & text) |
|---------------------------------|----------|---------------|---------------------------------|
| No loops were closed in 2015-16 | | | |
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Assessment Strategies

| For each course assessed in AY 2015-16 listed above, provide a brief description of the assessment strategy, including: | |
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| a description of the type of <u>student work or activity assessed</u> (e.g., research paper, lab report, hula performance, etc.); | No courses were assessed in 2015-16 |
| a description of <u>who conducted the assessment</u> (e.g., the faculty member who taught the course, or a group of program faculty, or the program's advisory council members, etc.); | No courses were assessed in 2015-16 |
| a description of <u>how student artefacts were selected for assessment</u> (did the assessment include summative student work from all students in the course or | No courses were assessed in 2015-16 |

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| <p>in terms of students' attainment of the CLOs and aligned PLOs.</p> | |
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Other Comments

| <p>Include any additional information that will help clarify the program's course assessment results.</p> | |
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| <p>Include comparisons to any applicable College or related UH-System program standards, or to any national standards from industry, professional organizations, or accrediting associations.</p> | <p>No courses were assessed in 2015-16</p> |
| <p>Include, if relevant, a summary of student survey results, CCSSE, e-CAFE, graduate-leaver surveys, special studies, or</p> | <p>No courses were assessed in 2015-16</p> |

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| <p>other assessment instruments used that are not discussed elsewhere in this report.</p> | |
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Next Steps – Assessment Action Plan

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| <p>Describe the program’s intended next steps to improve student learning, based on the program’s overall AY 2015-16 assessment results. Include any specific strategies, tactics, activities, or plans for instructional change, revisions to assessment practices, and/or increased student support.</p> | |
| <p>Instructional changes may include, for example, revisions to curriculum, teaching methods, course syllabi, course outlines of record (CORs), and other curricular elements.</p> | <p>No courses were assessed in 2015-16. However, CLOs are going to be reviewed and corrected if necessary.</p> |
| <p>Proposals for program modifications may include, for example, re-sequencing courses across semesters, or re-distribution of teaching resources, etc.</p> | <p>No courses were assessed in 2015-16. However, a need to re-sequence courses to ensure that students could complete them in a reasonable time and will be done in 2016-17.</p> |
| <p>Revisions to assessment strategies or practices may include, for example, revisions to learning outcome statements (CLOs and/or PLOs), department or course assessment rubrics (criteria and/or standards), development of multi-section/course summative assignments or exams, etc.</p> | <p>No courses were assessed in 2015-16. However, CLOs are going to be reviewed and corrected if necessary.</p> |
| <p>Student support and outreach initiatives may include, for example, wrap-around student</p> | <p>No courses were assessed in 2015-16</p> |

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| services, targeted tutoring and/or mentoring, etc. | |
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Part VI. Cost Per SSH

Please provide the following values used to determine the total fund amount and the cost per SSH for your program:

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General Funds = \$ _____

Federal Funds = \$ _____

Other Funds = \$ _____

Tuition and Fees = \$ _____

REM: Joni fills in this part

Part VII. External Data

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If your program utilizes external licensures, enter:

Number sitting for an exam _____

Number passed _____