

## University of Hawaii Community Colleges Annual Report of Program Data Analysis Preview

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**PREVIEW**

**College: Kauai Community College**  
**Program: Natural Science**



The last comprehensive review for this program was on Not Applicable. Program initiated in fall 2013..

### Program Description

The purpose of the Associate of Science in Natural Science (ASNS) degree is to address the needs of students interested in science, technology, engineering, and mathematics (STEM). Students can use the AS degree in Natural Science to better market their science background or in preparation for transfer to a four year institution. The ASNS in Biological Sciences provides a clear pathway to properly prepare students for transfer with core introductory courses and labs in biology, chemistry, and physics typically required in the first two years of a broad range of biological science baccalaureate degrees at four-year universities. The ASNS in Physical Sciences provides a clear pathway to properly prepare students for transfer with core introductory courses and labs in chemistry, mathematics, and physics typically required in the first two years of a broad range of physical science baccalaureate degrees at four-year universities.

### Part I. Quantitative Indicators

## Overall Program Health: **Cautionary**

Majors Included: NSCI Program CIP: 30.1801

Demand Indicators		Program Year			Demand Health Call
		14-15	15-16	16-17	
1	Number of Majors	15	19	20	<b>Healthy</b>
1a	Number of Majors Native Hawaiian	2	4	8	
1b	Fall Full-Time	47%	38%	47%	
1c	Fall Part-Time	53%	63%	53%	
1d	Fall Part-Time who are Full-Time in System	0%	6%	5%	
1e	Spring Full-Time	23%	52%	48%	
1f	Spring Part-Time	77%	48%	52%	
1g	Spring Part-Time who are Full-Time in System	15%	0%	0%	
2	*Percent Change Majors from Prior Year	76.4%	23.3%	8.1%	
3	SSH Program Majors in Program Classes	46	82	115	
4	SSH Non-Majors in Program Classes	390	359	1,164	
5	SSH in All Program Classes	436	441	1,279	
6	FTE Enrollment in Program Classes	15	15	43	
7	Total Number of Classes Taught	21	15	34	

Efficiency Indicators		Program Year			Efficiency Health Call
		14-15	15-16	16-17	
8	Average Class Size	9.4	13.3	11.7	<b>Cautionary</b>
9	*Fill Rate	58.2%	58%	51.6%	
10	FTE BOR Appointed Faculty	5	5	2.8	
11	*Majors to FTE BOR Appointed Faculty	3	3.7	7.2	
12	Majors to Analytic FTE Faculty	9.2	13.5	4.0	
12a	Analytic FTE Faculty	1.6	1.4	5.0	
13	Overall Program Budget Allocation	Not Reported	\$1,047,235	Not Yet Reported	

13a	General Funded Budget Allocation	Not Reported	\$1,030,144	Not Yet Reported
13b	Special/Federal Budget Allocation	Not Reported	\$0	Not Yet Reported
13c	Tuition and Fees	Not Reported	\$17,091	Not Yet Reported
14	Cost per SSH	Not Reported	\$2,375	Not Yet Reported
15	Number of Low-Enrolled (<10) Classes	14	6	13

\*Data element used in health call calculation

Last Updated: October 29, 2017

Effectiveness Indicators		Program Year			Effectiveness Health Call
		14-15	15-16	16-17	
16	Successful Completion (Equivalent C or Higher)	84%	84%	79%	<b>Cautionary</b>
17	Withdrawals (Grade = W)	6	6	20	
18	*Persistence (Fall to Spring)	52.9%	75%	73.6%	
18a	Persistence Fall to Fall	23.5%	43.7%	15.7%	
19	Unduplicated Degrees/Certificates Awarded Prior Fiscal Year	0	2	3	
19a	Associate Degrees Awarded	0	0	3	
19b	Academic Subject Certificates Awarded	0	0	0	
19c	Goal	-9,999	0	3	
19d	Difference Between Unduplicated Awarded and Goal	-100%	0%	0%	
20	Transfers to UH 4-yr	0	2	0	
20a	Transfers with degree from program	0	0	0	
20b	Transfers without degree from program	0	2	0	
20c	Increase by 3% Annual Transfers to UH 4-yr Goal	0	0	2	
20d	Difference Between Transfers and Goal	0%	0%	-100%	

Distance Education: Completely On-line Classes		Program Year		
		14-15	15-16	16-17
21	Number of Distance Education Classes Taught	0	1	3
22	Enrollments Distance Education Classes	N/A	11	20
23	Fill Rate	N/A	73%	40%
24	Successful Completion (Equivalent C or Higher)	N/A	73%	80%
25	Withdrawals (Grade = W)	N/A	0	2
26	Persistence (Fall to Spring Not Limited to Distance Education)	N/A	64%	61%

Performance Measures		Program Year		
		14-15	15-16	16-17
27	Number of Degrees and Certificates	0	2	3
28	Number of Degrees and Certificates Native Hawaiian	0	0	1
29	Number of Degrees and Certificates STEM	0	2	3
30	Number of Pell Recipients <sup>1</sup>	4	11	2
31	Number of Transfers to UH 4-yr	0	2	0

\*Data element used in health call calculation

Last Updated: October 29, 2017

<sup>1</sup>PY 16-17; Pell recipients graduates not majors

## Glossary | Health Call Scoring Rubric

### Part II. Analysis of the Program

#### ENROLLMENT and DEMAND

Demand rating is listed as “Healthy” in fall 2017 and Figure 1 below shows why. Enrollment grew from 5 students at the start of the program in 2013-2014 to 20 students in 2016-2017. KCC’s IR reports that enrollment is 32 students for the current Fall 2017 semester. It is noteworthy that enrollment in the ASNS is increasing markedly even as overall enrollment is falling at KCC and colleges across the nation.

As another sign of program demand, the college added a second section of chemistry and labs for science majors (CHEM 161/161L) in fall 2017. This is remarkable considering the college offered it every other year prior to fall 2014. CHEM 161/161L was not offered at all in Fall 2012, the year before implementing the ASNS degree program.

#### EFFICIENCY

Efficiency is rated as “Cautionary” in fall 2017. But, some issues with the official system APRD for Kauai CC’s ASNS program have been corrected continually over time while others have been discovered and will be corrected in the future. It is hard to compare measures to previous years because the proper courses and faculty were not included. For example, calculus courses were not included as ASNS courses but should be. Calculus tends to consistently fill and thus efficiency metrics should be a bit higher than they are in this year’s APRD. Average class size and fill rate numbers are brought down most by engineering courses which is understandable in that the engineering concentration was just approved for the start of fall 2016 semester.

The FTE faculty is officially listed as 5.0 but is spurious. The “true” number of FTE faculty is 4.25 for 2016-2017. Two criteria were used to determine ASNS courses; the majority of students in the course have a primary interest in

seeking academic degree and career in science, engineering, or math and the course is required as part of the degree program or is a prerequisite for a required ASNS course. The FTE load is based on these criteria.

The APRD may be operating on a fixed number of designated full-time “natural science” faculty. But, in reality, all faculty teaching core required ASNS courses teach more courses in other programs. MATH 205 and MATH 206 are taught by any of our five permanent, full-time math faculty in a given semester. Thus, the FTE load and criteria were developed as a more reasonable reflection of resource allocation.

### **EFFECTIVENESS**

Effectiveness is listed as “Cautionary” perhaps due to low numbers of graduates. Completion data are artificially low but problem has been corrected as described in Part III below. Spring 2018 will see an increase in graduates and that number should continue to grow in spring 2019 and beyond.

Fall-fall retention is low and success data look good in the APRD. But, interpretation of retention data is quite difficult because it is derived from small changes on relatively small enrollments. The APRD may not be using the proper courses, particularly in earlier years. And, enrollment data also have had their own issues. The ASNS coordinator identified some majors who really should not have enrolled in program and more who were not but should be. The APRD numbers are thus suspect and those from the IR are more reliable. The IR provided data on fall-fall and fall-spring retention. In both cases, retention numbers were more or less the same as the Liberal Arts AA program.

### **Part III. Action Plan**

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#### **PAST GOALS**

Goals from the last APRU were to increase declared ASNS majors, facilitate timely graduation, increase transfers, improve student success, and improve program management and evaluation. The goals were accomplished, largely through sensible changes to the ASNS curriculum. The former curriculum and a technical glitch made it nearly impossible for students to complete the degree. There was a course required that the college never offered. There were several courses required by KCC’s ASNS that were not required for the target degrees students sought. These requirements and the difficulty in meeting them prevented graduation and discouraged enrollment in the program. Also, a more lenient math requirement of “MATH 103 or higher” was coded such that “MATH 103” was specifically required. The intent was for MATH 103 or any higher course, namely MATH 205, would satisfy the degree. Instead, many students who did not need to take MATH 103 were not able to get the degree. The ASNS coordinator discovered the problem when conferring with the registrar regarding low completion rates. All of these problems have been fixed. The new requirements focus on a core set of courses common to most BS degrees at UH Manoa, namely a year of calculus, biology with labs for science majors, chemistry with labs for science majors, and physics with labs for science majors. Students are left with more freedom to get to 60 credits and can thus pursue the courses that make the most sense for the diversity of requirements specific to their major of interest. For example, some students want and need the second year of calculus. Others will want or need computer programming. Others may want to focus on general education requirements. The new curriculum for the ASNS is effective in the current semester, fall 2017.

The ASNS coordinator communicated the changes and their benefits were counselors in counselor meetings and one-on-one meetings. Faculty teaching ASNS courses were made aware. And the coordinator visited individual ASNS require core courses to notify students. Students were also presented with change of major forms and encouraged to enroll in the ASNS. That is probably why there was a jump from 20 majors in spring 2017 to 32 majors in fall 2017. These efforts reflect positively on management of the ASNS program.

The changes in curriculum that have already benefited enrollment should continue to do so. They should also benefit graduation and transfer rates beginning in spring 2018.

#### **CURRENT GOALS**

The goals are roughly the same as last year: increase enrollment, increase graduates and graduates with STEM degrees, increase transfers, and increase high school graduates enrolling at Kauai CC. The proposed goals specifically and clearly address priority goals 1, 4, 9, and 17. The ASNS coordinator would also like to continue seeking increased enrollment of Native Hawaiian students in the ASNS program, reflecting priority goal 2. KCC is a party to the Hale Ola Hanou NSF-TCUP grant with the specific purpose of increasing Native Hawaiian students in geosciences. An additional goal is to develop and implement program assessment plans.

#### **ACTION PLANS**

The ASNS coordinator will continue to lead efforts to spread the message about new ASNS requirements to current and prospective students. Continued effort will be needed to getting students signed up. This has and will come in the form of classroom visits to BIO 171/172, CHEM 161/162, MATH 205/206, PHYS 170/272 classes to survey students’ academic and career interests, inform them of the changes to the ASNS, and provide them the forms to declare or change their major. We will also host a STEM student meeting once per

semester for the same purpose. Individual instructors can follow-up and even collect and turn in the forms. Enrollment will be monitored closely. The IR has and will be tapped as a resource to help target students. The STEM faculty will hold specific meetings with college counselors to make sure they know and communicate the changes in degree requirements and the repercussions of those changes. Faculty will also meet with the registrar's office to explore back transfer opportunities with former Kauai CC students under the new degree requirements. And, we must do more PR, marketing, and outreach to high schools. Finally, fixes will be proposed to ensure the proper information goes into the APRD (e.g. include MATH 205 and MATH 206 as ASNS courses rather than Liberal Arts courses). Without these changes, APRD metrics of program health defy meaningful interpretation.

We should examine the number of students enrolling in the ASNS at KCC from each high school on the island and the high school course preparation. This information can be used later to augment student success.

Program assessment plans will be developed and implemented. The ASNS coordinator met with the PD coordinator, Assessment coordinator, and the Chancellor on October 2, 2017 and discussed assessment plans. The first hurdle is development of reasonable program student learning outcomes that are assessable and meaningful. There was general agreement that this is fortunately already the case.

### **METRICS**

The metrics are clear but may not be evident until the new program guidelines are in effect for at least one academic year. We hope and expect to see more ASNS majors, eventually doubling to 40 by spring 2018. Likewise, we expect more ASNS (STEM) degrees, and more ASNS transfers. The desired changes to the APRD will be conveyed to IR and system. Program assessment should be in the implementation stage by the end of the year, even if only the preliminary stages.

### **Part IV. Resource Implications**

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A biological science position is described and justified in the AA in Liberal Arts program APRU. Please refer to that information, which won't be repeated here in the interest of space. But please do consider a few additional points. This position should be converted to permanent status as it fulfills essential required courses in the ASNS Biological Science concentration. It would not be possible for students to graduate without those courses. Demand for the ASNS has been increasing. It is expected to continue to increase. Those increases are jeopardized by the temporary nature of the current biological sciences instructor. It would be better to have the stability of a permanent hire. The two previous biology instructors departed suddenly and we were left scrambling to fill the position at the last minute. The biology instructor has demonstrated additional value to the college while teaching several courses for the AA in Liberal Arts and AA in Hawaiian Students programs.

Two chemistry balances are also requested in the AA in Liberal Arts APRU but they will also benefit students in the ASNS. The ASNS has not asked for any regular funds in the last two APRU cycles other than this biological science position and the chemistry balances.

No other new resources are requested. However it should be noted that at least 6 new laptops are will be pursued for purchase. The money will be secured through a STEM grant to the UH Foundation. The laptops will be used primarily in ASNS laboratory courses using specialized equipment and applications. The laptops will also benefit other programs and be used for courses in AA degree in Liberal Arts, AA degree in Hawaiian Studies, and CTE courses taught by Science and Math division faculty.

### **Program Student Learning Outcomes**

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For the 2016-2017 program year, some or all of the following P-SLOs were reviewed by the program:

Assessed this year?	Program Student Learning Outcomes

Assessed this year?		Program Student Learning Outcomes
<b>1</b>	<input type="checkbox"/> No	Analyze data effectively using currently available technology
<b>2</b>	<input type="checkbox"/> No	Communicate scientific ideas and principles clearly and effectively
<b>3</b>	<input type="checkbox"/> No	Analyze and apply fundamental mathematical, physical, and chemical concepts and techniques to scientific issues
<b>4</b>	<input type="checkbox"/> No	Apply fundamental concepts and techniques in their chosen natural science field of study, such as biology, chemistry, engineering, physics, etc.

#### A) Expected Level Achievement

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No content.

#### B) Courses Assessed

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No content.

#### C) Assessment Strategy/Instrument

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No content.

#### D) Results of Program Assessment

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No content.

#### E) Other Comments

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#### F) Next Steps

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No content.

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