

Associate in Science Degree Natural Science



2019

ANNUAL REPORT OF PROGRAM DATA



UNIVERSITY *of* HAWAII®
MAUI COLLEGE

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Important Note: Some program courses need to be added in the ARDP system. These courses are indicated in a table rows with red color shading in

Appendix F. System manager please take action in

<https://www.hawaii.edu/offices/cc/arpd/displaycourses.php>

**Associates in Science in Natural Science (ASNS)
Annual Degree Program Assessment, Planning, and Budget Report
2018-2019**

I. Program Description

The Associate in Science degree in Natural Science (ASNS) program provides a comprehensive background in science and math courses designed specifically for students who plan to pursue baccalaureate studies in science, technology, engineering, and mathematics (STEM), or who plan to continue with professional studies, such as pre-pharmacy, pre-medical, or pre-dental programs. Students may choose to concentrate in biological science, physical science, engineering, or information and communication technology.

For each concentration, a new (most recent) format of the program map including the curriculum/ courses list is published in the 2019-2020 UHMC general catalog (see on Pages 24-27 in the <http://maui.hawaii.edu/assets/PDF/UHMC-General-Catalog-2019-2020.pdf>).

The ASNS curriculum provides a seamless pathway for students intending to transfer into a STEM degree at a four-year institution, in particular within the UH System where students may take advantage of transfer agreements with UH Manoa, UH Hilo, and UH West O'ahu.

The areas where major modifications in the new format were made: (a) Addition of two Global Multicultural Perspective as General Education Requirement. (b) Defining the General Education Requirement area as DA, DH, DL (Arts, Humanities, and Literature) as it used to only list the Humanity, and (c) Allowing a wide range of courses in the concentration electives area.

Note: Four concentrations of ASNS program

Biological Science Concentration (BSC)
Physics Science Concentration (PSC)
Engineering Concentration (ENGR)
Information and Communication Technology (ICT)

ASNS Provisional to Established passed:

The University of Hawaii BOR approved the ASNS program moving from provisional to established status on March 2019.

II. Quantitative Indicators:

Table 1: ASNS Program Enrollment and Graduates

Year		1	2	3	4	5	6	7	8
Enrollment	Concentration	2012	2013	2014	2015	2016	2017	2018	2019
Spring	BSC	0	2	10	15	13	17	17	15
	PSC	0	0	5	8	6	7	4	3
	ICT						0	N/A	1
	ENGR							N/A	1
	UNCL	1	14	23	31	32	28	25	26
	Total	1	16	38	54	51	52	46	46
Fall	BSC	2	7	13	13	17	21	21	
	PSC	0	8	4	7	8	8	6	
	ICT						1	1	
	ENGR						0	1	
	UNCL	10	14	30	37	29	24	20	
	Total	12	29	47	57	54	54	49	0
Graduates		2012	2013	2014	2015	2016	2017	2018	
Spring	BSC	0	2	1	1	0	2	3	3
	PSC	0	0	0	0	0	0	3	0
	ICT						0	0	1
	ENGR							1	0
	Total	0	2	1	1	0	2	7	3
Summer	BSC	0	0	0	0	0	0	0	
	PSC	0	0	0	0	0	0	0	
	ICT						0	0	
	ENGR							0	
	Total	0	0	0	0	0	0	0	0
Fall	BSC	0	0	0	0	0	0	0	
	PSC	0	0	0	0	0	0	1	
	ICT						0	0	
	ENGR						0	1	
	Total	0	0	0	0	1	0	2	

Note 1: ICT concentration effective as of Fall 2016.

Note 2: ENGR concentration effective as of Fall 2017.

UNCL = unclear, concentration yet to be determined

Table 2: Number of students declaring an ASNS major and percent change

Year	ASNS Enrollment	Percent change
2012	13	
2013	45	+71.11%
2014	85	+47.05%
2015	111	+23.42%
2016	105	-5.71%
2017	106	+0.94%
2018	95	-11.57%
2019	TBA	TBA

Note 3:

Met or exceeded baseline for Transfer out of UH 2-year institutions into UH 4-year institutions and transfer into UH 4-year institutions from UH 2-year institutions.

Met or exceeded goal for 150% graduation rates for 4YR and success rates (150% graduation + transfer out) for the community colleges)

Met or exceeded goal for Degrees and Certificates Awarded in STEM Fields






























Met or exceeded baseline for Total Degrees and Certificates Awarded

Performance Funding Model report can be found in the link below:



<http://blog.hawaii.edu/hawaiigradinitiative/performance-funding-model/> Retrieved on 9/22/2018
<http://blog.hawaii.edu/hawaiigradinitiative/performance-funding-model/>

Performance Funding Summary FY 2019 (Based on FY 2018 data)

Click on the measure below for details.

MEASURES	UHM	UHH	UHWO	HAW	HON	KAP	KAU	LEE	MAU	WIN
<u>Total Degrees and Certificates Awarded</u>										
<u>Degrees and Certificates Awarded – to Native Hawaiian Students</u>										
<u>Degrees and Certificates Awarded – in STEM Fields</u>			NA							

<u>Degrees and Certificates Awarded – to Pell Recipients</u>	▼	●	●	⬢	●	⬢	⬢	●	⬢	▼
<u>150% graduation rates for 4YR and success rates (150% graduation + transfer out) for the community colleges</u>	▼	▼	▼	▼	⬢	▼	▼	▼	●	●
<u>Transfer out of UH 2-year institutions into UH 4-year institutions and transfer into UH 4-year institutions from UH 2-year institutions.</u>	⬢	⬢	●	⬢	⬢	⬢	⬢	▼	▼	⬢

 Met or Exceeded Goal
  Met or Exceeded Baseline
  Did Not Meet Baseline

III. Program Learning Outcomes

Upon successful completion of the ASNS Degree Program, students will be able to

1. explain the natural and technological world using reflection and quantitative analysis including preparation of a plan to collect, process, and interpret data; evaluation of the plan, procedures, and findings; and communication of the conclusions;
2. explain scientific knowledge and understanding to different audiences for a range of purposes; and
3. apply scientific knowledge, skills, and understandings to problems and issues in daily life.

IV. Instrument used for assessment

NA

V. Industry Validation

Part of ASNS program activities included:

Outreach to public schools at high-school counselors' workshop – an intimate and interactive session showcased the equipment, resources, and ASNS program curriculum and STEM program.

Outreach using the Full STEAM-Ahead Events – in collaboration with UHMC's Nā Pua Noeau Center for Gifted and Talented Native Hawaiian Children.

Outreach using the Science Olympiad – local high school and middle school students are exposed to UHMC by participating in science competitions hosted by STEM faculty.

Support the Society for the Advancement of Chicanos/Native American in Science (SACNAS) Maui Chapter. This Chapter is a newly formed club supported by Ka Hikina O Ka Lā in the UH Maui College. The STEM faculty members are the advisory board members of the club.

VI. Courses (or Assignments) Assessed for PLOs and CASLO

BIOL 171 Lab (Critical Thinking)

MATH 205 (Quantitative Reasoning)

Biology 172: Introductory Biology II and Biology 172L (PLO Assessment)

VII. PLO Assessment Analysis

Attach in **Appendix A**

VIII. CASLO Reports

CASLO assessment report focused on Quantitative Reasoning (attach assessment report in **Appendix D**)

Faculty Report on CASLO Quantitative Reasoning

(Total 23 page pdf copy MATH205.pdf)

CASLO Assessment report [https://laulima.hawaii.edu/access/content/group/91ea6bed-23da-449e-8af8-](https://laulima.hawaii.edu/access/content/group/91ea6bed-23da-449e-8af8-76659235c891/Reports/Quantitative_Reasoning/Faculty_Reports/MATH207.pdf)

[76659235c891/Reports/Quantitative_Reasoning/Faculty_Reports/MATH207.pdf](https://laulima.hawaii.edu/access/content/group/91ea6bed-23da-449e-8af8-76659235c891/Reports/Quantitative_Reasoning/Faculty_Reports/MATH207.pdf)

Total 23 page pdf copy MATH205.pdf and CASLO Evidence report

IX. Action Plan and Next Steps

a. PLO

PLOs are in line with other UH System campuses.

b. CASLO

CASLOs are being met by program courses. Attach CASLO meeting report, **Appendix E**.

c. Program Improvement

1) New position in Biology or Marine?

Instructor of Biology - hired in the fall 2018 semester. Position #0083866

2) Need to hire Anatomy-Physiology instructor.

- 3) Upper-division science courses including AQUA 362, 466; BIOL 361, 424; and OCN 351 added (or will be added) to electives options.
BIOL 490V, Ecosystem Protection & Restoration, offered in the fall 2018 semester.
Need to hire instructors for Upper-division classes, or these courses are designed for sustainable science students and will be incorporated with sustainable science program managers.
SSM 384, Sustaining Globalized Ocean, offered in the fall 2018 semester.
BIO 331 & 331L, Marine Mammal Biology, offered in the spring 2018 semester.
- 4) Additional concentrations Sustainability Sciences Management and Marine Science will be planned to meet student needs.
- 5) Information and Communication Technology concentration has been added in the ASNS program in the fall 2016 semester.
- 6) Engineering concentration has been added to the ASNS program in the fall 2017 semester to meet the student needs. A significant number of students showed their interest in engineering concentration through their enrollment in the fall 2017 semester.
- 7) Program will focus on critical thinking of CASLO assessment. Program meeting will identify an action plan for improving critical thinking based on the previous report (**Appendix E**). The action plan will be reported in next program review.

X. Chart of Resources Need

Budget Request	Amount	Justification for how this will improve learning
Lab Tech	\$39,000-\$48,000	The lab tech is crucial to the successful running and workings of all the labs and provides invaluable support for all lab classes and this enhances student success.
Mathematics instructor	\$58,000	Maths program is a core curriculum of the ASNS and currently we have not replaced few full time tenure track faculty positions. The previous instructor retired or regined and the math classes running by lecturers. Need full time faculty to teach courses and manage the equipment & resources.
Tutoring in Ike Lea Student Library	\$10,000	Students need help in their homework, quizzes, and class projects. The Student Library provides an ideal environment to engage students for improving their learning.

Appendix A: Program Learning Outcomes

This section includes (i) PLO Maps, and (ii) PLO Assessments.

- PLO Map: Grid which shows program courses and at what level (0,1,2,3) each PLO will be assessed.

Map of Program Learning Outcomes by Course General Education and Program Requirements

	CHEM 161	CHEM 161L	CHEM 162	CHEM 162L	MATH 205
PLO 1	3	3	3	3	2
PLO 2	3	3	3	3	1
PLO 3	3	3	3	3	1

Map of Program Learning Outcomes by Course Biological Science Concentration

	BIOL 171	BIOL 171L	BIOL 172	BIOL 172L	PHYS 151	PHYS 152
PLO 1	3	3	3	3	3	3
PLO 2	3	3	3	3	3	3
PLO 3	3	3	3	3	3	3

Map of Program Learning Outcomes by Course Physical Science Concentration

	MATH 206	PHYS 170	PHYS 272
PLO 1	2	3	3
PLO 2	2	3	3
PLO 3	2	3	3

- Assessment Plan: (Grid which shows when each PLO will be assessed. Each PLO should be assessed twice during each five-year cycle.)

Program learning outcomes to be assessed each year of the program review cycle learning outcomes identified by PLO number (this is a few years old record)

PLO	F10	S11	F11	S12	F12	S13	F13	S14
1	CHEM 161/161L	CHEM 162/162L	MATH 205	MATH 206	PHYS 170	PHYS 272	BIOL 171/171L	BIOL 172/172L
2			BIOL 171/171L	BIOL 172/172L	CHEM 161/161L	CHEM 162/162L	PHYS 170	PHYS 272
3			PHYS 151	PHYS 152	BIOL 171/171L	BIOL 172/172L	CHEM 161/161L	CHEM 162/162L

Analysis of Student Outcome and Goal Achievement

- List PLO(s) being assessed, and which courses are being used to assess the PLO

PLO Being Assessed

PLO 3: Upon successful completion of the ASNS Degree Program students will be able to apply scientific knowledge, skills, and understandings to problems and issues in daily life.

Courses Being Assessed: Biology 172: Introductory Biology II and
Biology 172L: Introductory Biology II Laboratory

- Describe the assessment methods used to analyze the outcome

Faculty Report on Evidence of ASNS Degree Program Learning Outcome (PLO) Achievement. Evidence of student learning to support the PLO was collected from Biology 172: Introductory Biology II and 172L: Introductory Biology II Laboratory, which are gatekeeper courses for the Biological Concentration in this degree. By the time students are enrolled in these courses, their mathematics skills are better than the average UHMC student and the concepts that are introduced are logical and have many applications.

Appendix B: Relevant Institutional Recollection files

(Some data in this appendix are collected from Prof. Ann Coopersmith, former program coordinator)

- Describe the criteria for success: (rubric or measurement for desired level of achievement)

Number of students transferring to STEM baccalaureate degrees at other colleges.

One of the two May 2013 ASNS graduates transferred to University of California, Scripps Institute of Oceanography in La Jolla, and the other one is applying to a baccalaureate degree in pharmacology.

- Discuss your findings based on the evidence.
 - Describe summative evidence (attach rubric), Refer to Appendix #3.
 - What have you discovered about student learning?

According to the *Rubric for Evaluating Program Outcome and Goal Achievement*, the ASNS degree program ranked

- Acceptable in
 - PLOs - Faculty expectation of their graduates
 - Assessment methods - How faculty will collect evidence to determine how well students meet their expectations
 - Action plan – The changes made to address issues in the findings and the efficacy of the changes.

- Exemplary in
 - Criteria for success - The level of performance that meets program standards
 - Findings – The degree to which students met the program standard
- Findings: According to the *UH Maui College Degree Program Assessment Rubric, Essential Elements*, the ASNS degree program ranked
 - Awareness in
 - Engaged Community
 - Developing in
 - Environment for Achievement: Retention, Persistence, and Graduation Rates
 - Outcome and Goal Achievement
 - Budgetary Consideration and Impact
 - Proficient in
 - Recognize and Support Best Practices
 - Planning and Policy Considerations

Action Plan

- Changes to improve student learning
 - As noted in the assessment, the instructor has instituted complete laboratory reports this semester in CHEM 161L.
 - The instructor holds regular study and review sessions for students who need additional help.
 - The instructor offers extra credit for reports on scientific articles that illustrate applications and relate directly to the topics begin covered in class.
- How assessment supports current program goals
 - Three of the ASNS gatekeeper courses (Chemistry 161, 161L, and 162L) indicate that instruction clearly supports the program goals
- Program strengths and weaknesses
 - The ASNS degree has been instituted in the year 2012 with Biological Science and Physics Science concentrations.
 - The ASNS degree program in ICT concentration developed in Fall 2016.
 - The ASNS degree program in Engineering concentration developed in Fall 2017.
 - The program started with the enrollment of 13 students, currently the number of enrollment is over 100 students each year.
 - Counselors are directing STEM students to this degree.
 - Six students graduated with this degree in Spring 2018.
 - At least two students will be graduating with this degree in Spring 2019.
 - Met or exceeded baseline for Transfer out of UH 2-year institutions into UH 4-year institutions and transfer into UH 4-year institutions from UH 2-year institutions.
 - Met or exceeded goal for 150% graduation rates for 4YR and success rates (150% graduation + transfer out) for the community colleges)
 - Met or exceeded goal for Degrees and Certificates Awarded in STEM Fields
 - Met or exceeded baseline for Total Degrees and Certificates Awarded

Engaged Community

Evidence of community engagement is indicated by

1. an increasing interest in and enrollment in the ASNS program as students become more aware of a) the opportunities in STEM careers, and b) the advantages of a degree that focuses on pre-requisites for baccalaureate degrees;
2. the recent Department of Labor grant award focuses on training for sustainable energy and GPS/GIS technology careers where there are emerging opportunities;
3. institution of the popular Summer Bridge programs for Native Hawaiian high-school students in Computer Technology, Electrical Engineering, Physics, Agriculture, Sustainable Technologies, Science Lab Tech, Marine Science and Native Hawaiian Health;
4. an increase in grant request-for-proposals (RFPs) addressing needs in STEM areas (UHMC submitted a B-WET proposal for a teacher training workshop in earth and ocean sciences);
5. an increase in (a) internships at the Hawaiian Islands Humpback National Marine Sanctuary and the Maui Ocean Center, and (b) service-learning projects with Whale Trust, Hawai'i Wildlife Fund, Maui Nui Botanical Garden, UHMC Community Garden, and Digital Bus.
6. an increase in outreach programs for middle school students through Educational Talent Search programs.

Recognize and Support Best Practices

- Use of innovative teaching techniques and technology
The development of various technological tools in the sciences is expanding just as rapidly as the use of computers and the Internet in teaching and, in many cases, using the computer as an interface for data collection and analysis. Some examples from the science laboratory classes are included below.
 1. Recently we have been using GPS and GIS technologies in field classes. The new DOL grant is focusing on these skills for viable career options.
 2. Reasonably priced chemical kits and probes (such as those from Vernier) allow students to quickly determine a great variety of water, soil, air, and physiological parameters without complicated and time-consuming analytical lab procedures. These lab tools also allows data to be recorded over time in a continuous experiment.
 3. Vernier and PASCO technologies have been using in Physics, Chemistry, Astronomy, and Biological science classrooms. These technologies allow students to quickly investigate the problems in mechanics, heat & thermodynamics, optics, electricity & magnetism, spectroscopy, including many chemical and biological phenomena.
 4. Contamination of sea water with mammalian bacteria can be determined easily by anyone using the IDEXX method to detect levels of *Enterococcus* bacteria in ocean

waters. Any data that indicates levels above those considered safe is immediately reported to Department of Health, Clean Water Branch for follow-up on exact measures and remediation.

5. Many reasonably priced kits are available for experiments and demonstrations of a wide variety of biotechnical and sustainable science topics.

Planning and Policy Considerations

- Curriculum changes: (few items copied from Ann Coopersmith's file)
 1. Yearly updates are made to the program to include newly developed or additional appropriate courses and to delete courses that have been dropped from the catalog.
 2. In Fall 2012, a CAR for a Marine Science Concentration was proposed to prepare UHMC students to enroll in the UH-Hilo Bachelor in Arts in Marine Science (BAMS) degree that will be offered by distance learning.
 3. Split all lecture/lab combination classes into separate lecture and lab courses.
 4. System wide effort in Common Course Numbering/Alignment Initiative. Recommended to change SCI 122 Physical Science to PHYS 122 Physical Science @ UH Manoa.
 5. ASNS provisional to established program.

Budgetary Considerations and Impact (copied from Ann Coopersmith's file)

- Capital, operational, and supply budget based on evidence of assessment:
 1. This program is most fortunate to have access to a new science building beginning in the fall of 2013. Included in that project is state-of-the-art course delivery equipment and there will be ample laboratory space to allow for additional sections in most of the sciences. This may necessitate hiring more instructors to teach an increased number of laboratory sections.

For many years, there has been a clear stated need for both full-time Chemistry and Oceanography instructors and another Physics instructor will need to be hired.
 2. There is money in the RDP grant for Ocean Studies that will allow the college to acquire approximately \$80,000 in equipment and supplies in to support the marine sciences programs. (copied from Ann Coopersmith's file)
 3. There is additional money in the RDP grant for Ocean Studies to hire an additional counselor for the Marine Sciences BA and BAS degrees, which will relieve the counseling load for STEM students.

Appendix C: New Program Map

New format of course list and Program Map of ASNS program are found on Pages 24-27 as published in the 2019-2020 UHMC general catalog:
<http://maui.hawaii.edu/assets/PDF/UHMC-General-Catalog-2019-2020.pdf>

Appendix D: CASLO Quantitative Reasoning

Faculty Report on CASLO Quantitative Reasoning (Total 23 page pdf copy MATH205.pdf)

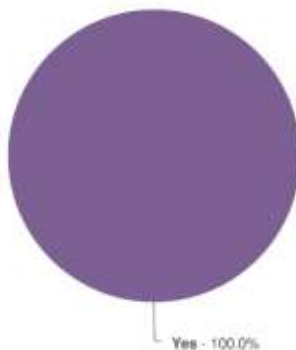


Natural Sciences--Quantitative Reasoning CASLO Report

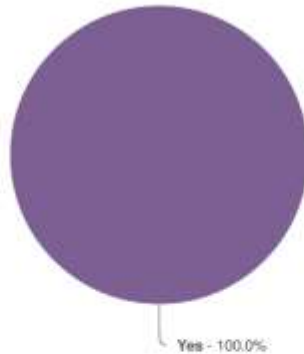
1. Please select the UHMC program for this assessment from the list below.

Count	Response
6	Natural Science

2. After reviewing the Faculty Report on CASLO Evidence, the correlating course outline, and the Quantitative Reasoning rubric, please indicate your response to the following statements: The "minimally passing" evidence demonstrates student achievement of the Quantitative Reasoning CASLO at a level of skill appropriate for the degree.



3. After reviewing the Faculty Report on CASLO Evidence, the correlating course outline, and the Quantitative Reasoning rubric, please indicate your response to the following statements: Based on the evidence presented, students in the program generally develop and demonstrate the quantitative reasoning skills needed as graduates of the program.



4. CASLO assessment methods (tests, projects, assignments, capstones, portfolios) should prompt students to demonstrate exit-level skills that are relevant to the needs of graduates. What suggestions do you have for improving the test, assignment, or project used for this assessment activity?

Response

Include some problems associated with exponential and logarithmic functions.

no suggestions

The exam that was used as evidence for this assessment was adequate. It did not address the ASNS PLO "3. apply scientific knowledge, skills, and understandings to problems and issues in daily life" which will be examined separately.

I think this assignment (final exam) is a good representation of the skills that graduates of the ASNS program will need to be successful in the remainder of their college courses, i.e. for Calc II and beyond.

I think the UH Hallmarks have some good examples of simple assignments that ask students to demonstrate outcome 2.5 on supporting an argument of method. I think this kind of assignment would put an appropriate emphasis on practical application of QR skill in the assignment.

5. UHMC programs strive to design curriculum and learning experiences that result in graduates who are prepared to pursue academic, career, and personal goals. What suggestion do you have for improving curriculum, instruction, or student services to better develop the quantitative reasoning skills needed of graduates from this program?

Response

Having a more solid and well-thought-out STEM road-map can certainly help.

no suggestions

Response

It seems that counselling might improve its identification and guidance of students in the program, especially those who will continue at 4yr in the UH system.

It appears that students who complete this course will be prepared to use calculus for analysis of physics and biology problems.

As discussed, I think an Applied Calculus or Life Science Calculus course would be more appropriate for the ASNS students than traditional Calculus. We do not offer the course. It is only offered at Manoa, not at any of the other CC's or at Hilo. If we had enough interest and enrollment, I think that offering the course would highly benefit our students, and might even attract more students to the major, who might be intimidated by traditional Calculus. Since many students are interested in transferring to Hilo, though, transferability of the course would need to be taken into account.

Help room / tutoring class would help individual students to develop their skills on QR problem & solution.

6. CASLO Assessment activities are designed to help programs align curriculum and instruction with the needs of students. How can this assessment practice be improved?

Response

Include some hands-on type of exercises in the assessments.

More frequent program assessments on each CASLO item

The assessment practice is carefully planned and comprehensive. No suggestions for improvement.

By making it explicitly clear to students via the syllabus what the needs to be demonstrated via their work to prove that they have met the requirements for quantitative reasoning.

I wonder if there's a way to show the samples to upper division faculty at 4-year programs to get their feedback.

7. Please share any other comments or suggestions that may be helpful in improving the quantitative reasoning skills of students in this program.

Response

Besides the tests, possibly other components such as projects etc. can be considered.

How many graduates do we need to justify a degree?

Response

no suggestions

Students should devote more time towards solving math problems. They should develop their thinking mathematically also.

Appendix E: CASLO Critical Thinking

CASLO meeting report



Natural Science CASLO Report--Critical Thinking

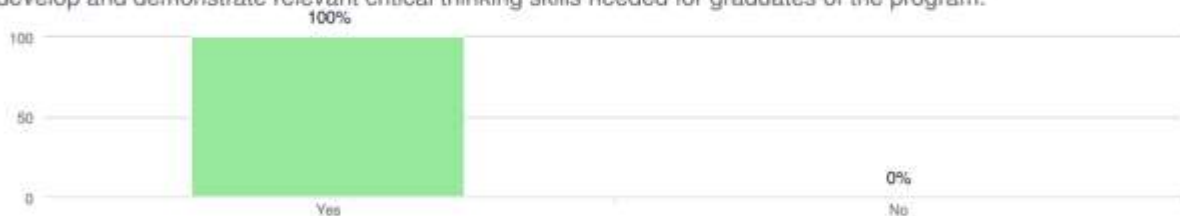
1. Please select the UHMC program for this assessment from the list below.

Count	Response
2	Natural Science

2. After reviewing the faculty report and samples of student work, please respond to the following: The "minimally passing" sample demonstrates achievement of the critical thinking CASLO at a level appropriate for the degree.



3. Assuming that the samples of minimal and exemplary work represent the range of critical thinking skills students demonstrate in order to qualify for the degree, please respond to the following: Students in the program develop and demonstrate relevant critical thinking skills needed for graduates of the program.



4. What suggestions do you have for improving the test, assignment, or project used for this assessment activity?

Count	Response
1	Using more variety of assessment types - e.g. problem set, quiz, timed quiz, test, survey, etc.
1	This may not have been the assignment that requires students to demonstrate their highest level or critical thinking within the course, but the assignment does nicely illustrate the critical thinking students perform routinely as they complete the course.

5. What suggestion do you have for improving curriculum, instruction, or student services to better develop the critical thinking skills needed of graduates from this program?

Count	Response
1	Encourage to create teaching philosophy that would motivate students for life long learning.

Count	Response
-------	----------

- | | |
|---|---|
| 1 | The program requires that students complete two courses with lab components which suggests that students develop and practice substantive critical thinking. It might be a good idea for the program to consider whether students demonstrate the kind of critical thinking that a junior level instructor would expect from students in an upper division science class. Is there an assignment where students are asked to demonstrate this level of achievement? |
|---|---|

6. CASLO Assessment activities are designed to help programs identify educational gaps and best practices in the aim of aligning curriculum and instruction with students needs. How can this assessment practice be improved?

Count	Response
-------	----------

- | | |
|---|--|
| 1 | By monitoring or regulating the curriculum/syllabi of the courses through such assessments. |
| 1 | As the program takes root and expands, it will be essential to have meaningful feedback on whether students are graduating with the skills needed for success post graduation. In future CASLO assessment meetings, inviting broader participation should be helpful in guiding the program. |

7. Please share any other comments or suggestions that may be helpful in improving the critical thinking skills of students in this program.

Count	Response
-------	----------

- | | |
|---|--|
| 1 | I would suggest to consider a lecture class or lecture + lab together in order to capture all components of the critical thinking - CASLO. The lab course is easy to manage but it may not fully cover the conceptual areas of the topic/course. |
|---|--|

Note:

1. An applied calculus and/or life science calculus course would be more appropriate for the ASNS students than traditional calculus.
2. Tutoring classes would help individual students to develop their skills on quantitative reasoning problem & solution.

Appendix F: Program Courses

MAU	General & Pre-Professional Instr	BIOL	171	Introductory Biology
MAU	General & Pre-Professional Instr	BIOL	171L	Intro Biology Lab
MAU	General & Pre-Professional Instr	BIOL	172	Intro Biology II
MAU	General & Pre-Professional Instr	BIOL	172L	Intro Biology II Lab
MAU	General & Pre-Professional Instr	BIOL	331	Marine Mammal Biol
MAU	General & Pre-Professional Instr	BIOL	331L	Marine Mammal Lab
MAU	General & Pre-Professional Instr	CHEM	100	Chemistry & Society
MAU	General & Pre-Professional Instr	CHEM	100L	Chem & Society Lab
MAU	General & Pre-Professional Instr	CHEM	151	Elem Survey Chemistry
MAU	General & Pre-Professional Instr	CHEM	161	General Chemistry I
MAU	General & Pre-Professional Instr	CHEM	161L	General Chemistry Lab I
MAU	General & Pre-Professional Instr	CHEM	162	Gen Chemistry II
MAU	General & Pre-Professional Instr	CHEM	162L	Gen Chem Lab II
MAU	General & Pre-Professional Instr	EE	160	Programmng for Engineers
MAU	General & Pre-Professional Instr	EE	211	Basic Circuit Analysis I
MAU	General & Pre-Professional Instr	PHYS	151	College Physics I
MAU	General & Pre-Professional Instr	PHYS	151L	College Physics I Lab
MAU	General & Pre-Professional Instr	PHYS	152	College Physics II
MAU	General & Pre-Professional Instr	PHYS	152L	College Physics II Lab
MAU	General & Pre-Professional Instr	PHYS	170	Gen'l Physics I
MAU	General & Pre-Professional Instr	PHYS	170L	Gen'l Physics I Lab
MAU	General & Pre-Professional Instr	PHYS	272	Gen'l Physics II
MAU	General & Pre-Professional Instr	PHYS	272L	Gen'l Physics II Lab

Important Note: Some program courses need to be added in the ARDP system. These courses are indicated in the table rows here with red color shading. System manager please take action in <https://www.hawaii.edu/offices/cc/arpd/displaycourses.php>

Appendix: ARPD Data

College: **University of Hawai'i Maui College**Program: **Natural Science**

Status: Report Complete

Program Quantitative Indicators



STEM Major

Overall Program Health: **Unhealthy**
[Print ARPD](#)

Demand Indicators		2016-17	2017-18	2018-19	Demand Health
1.	Number of Majors	52	50	44	Unhealthy
1a.	Number of Majors Native Hawaiian	22	13	8	
1b.	Fall Full-Time	53%	64%	38%	
1c.	Fall Part-Time	47%	36%	62%	
1d.	Fall Part-Time who are Full-Time in System	2%	4%	7%	
1e.	Spring Full-Time	55%	50%	49%	
1f.	Spring Part-Time	45%	50%	51%	
1g.	Spring Part-Time who are Full-Time in System	4%	7%	9%	
*2.	Percent Change Majors from Prior Year	-2%	-5%	-11%	
3.	SSH Program Majors in Program Classes	128	230	154	
4.	SSH Non-Majors in Program Classes	943	844	814	
5.	SSH in All Program Classes	1,071	1,074	968	
6.	FTE Enrollment in Program Classes	36	36	32	
7.	Total Number of Classes Taught	23	30	32	

Efficiency Indicators		2016-17	2017-18	2018-19	Efficiency Health
8.	Average Class Size	17	16	13	Cautionary
*9.	Fill Rate	82%	81.6%	64%	
10.	FTE BOR Appointed Faculty	1	1	2	
*11.	Majors to FTE BOR Appointed Faculty	52	49	22	
12.	Majors to Analytic FTE Faculty	26	16	14	
12a.	Analytic FTE Faculty	2	3	3	
13.	Overall Program Budget Allocation	\$0	\$261,489	\$0	
13a.	General Funded Budget Allocation	\$0	\$261,489	\$0	
13b.	Special/Federal Budget Allocation	\$0	\$0	\$0	
13c.	Tuition and Fees	\$0	\$0	\$0	
14.	Cost per SSH	\$0	\$0	\$0	
15.	Number of Low-Enrolled (<10) Classes	1	6	15	

Effectiveness Indicators		2016-17	2017-18	2018-19	Effectiveness Health
16.	Successful Completion (Equivalent C or Higher)	84%	77%	76%	Unhealthy
17.	Withdrawals (Grade = W)	26	40	34	
*18.	Persistence Fall to Spring	72%	64%	56%	
18a.	Persistence Fall to Fall	34%	29%	33%	
19.	Unduplicated Degrees/Certificates Awarded Prior Fiscal Year	3	5	6	
19a.	Associate Degrees Awarded	3	6	6	
19b.	Academic Subject Certificates Awarded	0	0	0	
19c.	Goal	0	0	0	
19d.	Difference Between Unduplicated Awarded and Goal	0	0	0	
20.	Transfers to UH 4-yr	5	10	12	
20a.	Transfers with degree from program	4	7	3	
20b.	Transfers without degree from program	1	3	9	
20c.	Increase by 3% Annual Transfers to UH 4-yr Goal				
20d.	Difference Between Transfers and Goal				

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Distance Indicators		2016-17	2017-18	2018-19	
21.	Number of Distance Education Classes Taught	0	3	5	
22.	Enrollments Distance Education Classes	0	89	104	
23.	Fill Rate	0%	148%	87%	
24.	Successful Completion (Equivalent C or Higher)	0%	70%	72%	
25.	Withdrawals (Grade = W)	0	6	4	
26.	Persistence (Fall to Spring Not Limited to Distance Education)	0%	67%	61%	

Performance Indicators		2016-17	2017-18	2018-19	
27.	Number of Degrees and Certificates	3	6	6	
28.	Number of Degrees and Certificates Native Hawaiian	0	1	1	
29.	Number of Degrees and Certificates STEM	5	8	9	
30.	Number of Pell Recipients ¹	1	2	4	
31.	Number of Transfers to UH 4-yr	5	10	12	

* Used in Rubric to determine Health Indicator

Date Last Modified: 2019-10-15 11:43:06

[Glossary/Rubric](#)