UNIVERSITY *of* ALASKA SOUTHEAST

FISHERIES TECHNOLOGY
SITKA CAMPUS

Applied Fisheries Program Assessment Report

Academic Year 2021 - 2022

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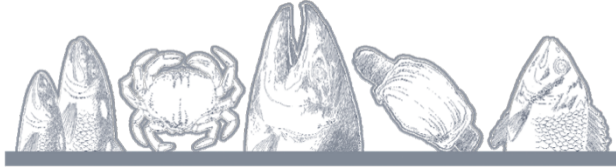1332 Seward Avenue Sitka, Alaska 99835
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University of Alaska Southeast (UAS) Applied Fisheries Program Assessment of Student Learning Outcomes (SLO) Report for Academic Year (AY) 2021-2022.

1. Program Overview

The Applied Fisheries Program (formerly Fisheries Technology / FT) is an industry driven program that focuses on career training to put students to work. The Applied Fisheries program is the only one and two-year, entry-level academic program in fisheries in the UA system. The mission of the program is to provide students with a broad educational and practical foundation in the field of fisheries, aquaculture, mariculture, and scientific diving. Students will be prepared for entry level employment in federal or state agencies, private-non-profit aquaculture and mariculture facilities (PNPs), and various private sector fisheries employers. Students will also be prepared to progress from the two-year degree to related four-year degrees should they choose to continue on academic pathways. The goal is for program graduates to fill high demand fisheries jobs in Alaska or pursue a Bachelor's degree in fisheries or related fields.

This Program Level Student Learning Outcomes Assessment Report is for the Applied Fisheries AAS, the Certificate (Alaskan Aquaculture Emphasis and Fisheries Management Emphasis) and the three Occupational Endorsements (Alaskan Aquaculture, Fisheries Management, and Scientific Diving).

2. Program Student Learning Outcomes (SLOs)

Goal 1. Students will describe ecological attributes of fish and their habitats.
Outcome 1.1. Students will identify common commercial species of Alaska and understand their habitat needs.
Outcome 1.2. Students will describe water as an environment for life.
Outcome 1.3. Students will convey fishery information to faculty and classmates.

Goal 2. Students will demonstrate sound field sampling techniques.
Outcome 2.1. Students will collect, analyze, and present fisheries data utilizing standard methodologies.
Outcome 2.2. Students will describe the importance of following protocols and techniques; utilizing good field data collection techniques and data recording techniques.
Outcome 2.3. Students will describe methodologies and protocols; practice good data management skills; summarize and communicate findings.
Outcome 2.4. Students will discuss the importance of correct data collection and analysis.

Goal 3. Students will operate safely while participating in program activities and utilizing program equipment.
Outcome 3.1. Students will identify methods for reducing injury in the field and lab setting.
Outcome 3.2. Students will discuss safe operating procedures for equipment; assess field conditions to determine safety guidelines to follow.
Outcome 3.3. Students will discuss the importance of promoting safety for self and others and equipment.

Goal 4. Students will describe the basic principles of salmon enhancement techniques used in Alaskan hatcheries.
Outcome 4.1. Students will describe the basic process involved in fish rearing.
Outcome 4.2. Students will take part in "hands-on" procedures to ensure successful output of fish.
Outcome 4.3. Students will describe attributes of Salmon Culture facilities in Alaska.

Goal 5. Students will describe management and legal frameworks within which marine fisheries exist.
Outcome 5.1. Students will describe the legal and regulatory framework of marine fisheries in Alaska.
Outcome 5.2. Students will describe the current status of marine fisheries statewide.
Outcome 5.3. Students will describe the social and economic value of Alaska fisheries to the state and nation.

3. How data are collected on the Program SLOs

The Applied FIsheries program has detailed Student Learning Outcomes (SLOs) that are hierarchically nested from the individual lesson, to the course, to the program level. As part of this program level student learning assessment, we collect data on program enrollment, student learning via exam scores, summary reports of exam effectiveness (Appdx A), comparison of pre and post course exams, student evaluations, and through surveys of program graduates (Appdx B).

4. The data collected on the Program SLOs during the previous academic year (AY 2021 - 2022)

Student Enrollment Data - In Academic Year 2021 - 2022 the Applied Fisheries Program had a student headcount (SHC) of 350 students who took 849 student credit hours (SCH).
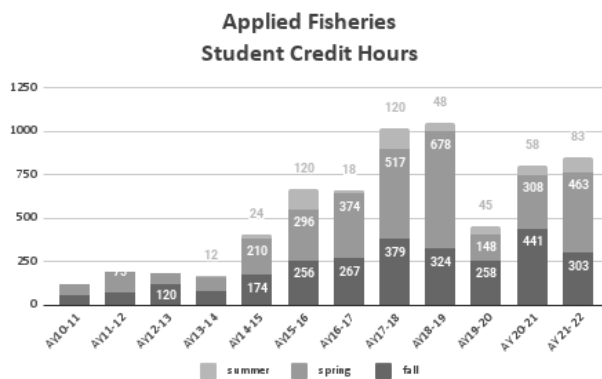

Figure 1. Student Credit Hours (SCH) by Academic Year

Student exam scores – Though exam scores show that students have a certain measure of knowledge at the time of taking each exam, it does not account for what students bring into the classroom. Average exam scores across courses ranged ~85%. Typically exam scores

improve over the course of the semester as students become more familiar with the course content, delivery style, and assessment techniques.

Summary reports of exam effectiveness – During this academic year, many students took digital exams which allow us to examine student performance on individual learning outcomes, assessment reliability, as well as individual exam question performance (Appdx A). A summary report for each exam is printed and evaluated based on 1) assessment reliability (Kuder-Richardson Formula 20 where each exam is scored on the likelihood of a student repeating the same performance), 2) student performance on individual learning outcomes or content categories, and 3) individual exam question performance to ensure that students are comprehending the information associated with each learning outcome. An example summary report can be found in Appendix A.

Pre and Post exams scores – To determine what students learned during their course, we conduct pre and post exams for all full semester length Applied Fisheries courses. Students are given a 30 question exam prior to receiving any content in each class, and at the end of the course, students are given the same exam. This difference in these exam scores can be an indicator of learning that has taken place as a result of the students participation in the course.

Student Evaluations – Though student evaluations do not explicitly relate to knowledge gained by students, they allow us to evaluate student perception of the content and curriculum, and infer how students learn so that we may improve our delivery and content for future courses. As part of our evaluations we ask students if they thought the courses were valuable, if they would take another course from us, and if they would recommend our classes to other students. In addition we ask students if there is anything they would change about the course. This information is then used to update course content, approaches to student assessment, and refine overall course delivery.

Survey of Graduates – *Summer 2018*
During Summer 2018, UAS Fish Tech students were asked to fill out a short Google Form with respect to their completion status, connection with fisheries industries, employment organizations, perception of Fish Tech curricula helping with current employment and further education (N=30 students; Appdx B)

Writing Assignments and Creative Projects
Part of our assessment tools include weekly writing assignments and three larger creative projects in the majority of our distance courses. These assignments are "artifacts of learning," where students are asked to in essence, teach content, one the highest levels of learning according to Bloom's Taxonomy. In addition to being another assessment tool for our faculty to assess student learning, the introduction of writing assignments and creative projects also allows students to have a diverse set of learning opportunities available, reducing the pressure on students that do not score well on exams.

Certifications for semester intensives

Student learning is additionally assessed via demonstration of "skills practicals," which when complete, allows for national and international certification. These assessments were initially utilized in our O.E. in Scientific Diving and the success of this model has allowed the creation of two additional Occupational Endorsements (Alaskan Aquaculture and Alaskan Mariculture) where students success and learning are assessed through traditional exams, pre and posttests, and hands on skills practicals resulting in certifications. The first of these additional OE's was offered in the Fall of 2021 and the other was offered in Fall 2022.

5. Evaluation of Student Learning Data from the previous academic year

In AY 2021-2022, the Applied Fisheries program continued to increase enrollment from the previous year with respect to Student Headcount (n=350) and Student Credit Hours (n=849). These increases in student enrollment were despite the continued aftermath of devastating university budget declines and an ongoing global pandemic. These increases not only show the resilience of the program and faculty, but the demand for the courses and degrees offered. Although this is not a direct measure of student success, it could be considered a relative proxy.

Exams scores for this academic year averaged in the mid B range and through evaluations of testing effectiveness, and ~85% of students would likely repeat the same performance on their exams based on the Kuder-Richardson formula.

Pre and post exams allow us to not only determine improvement in learning, but also the level where students are coming into classes. Mean pre-test scores averaged ~55% and post-test scores ~85%, When examined individually these data suggest student knowledge improved by ~30% by the end of their courses.

Almost all of the students that completed end of course surveys said that they found the courses informative, would take another course, and would recommend an Applied Fisheries course to a friend.

In Summer 2018, Fish Tech faculty surveyed recent graduates and asked them if they thought their courses have prepared them for the workplace. Of 30 student surveys, 77% said that they were working in the fisheries industry, 100% said that they felt that their Fish Tech education helped prepare them for their current job and at least 24% said that they have continued on to a higher level of university education.

Introducing Writing Assignments and Creative Projects has allowed faculty other tools to assess student learning and students to enhance their education using different types of tools. These additional tools were widely popular with students because they felt they learned materials in a more in-depth manner and it allowed them to apply theoretical information to their personal life and experiences. Writing Assignments and Creative projects are now included in all Applied Fisheries full-length semester courses with the exemption of one techniques heavy course.

Finally, the development of a semester intensive course sequence has allowed students from all over the country to visit Alaska, take University of Alaska courses, and complete a

number of credentials over a short period of time. This new direction in teaching has allowed Fish Tech faculty to assess student learning "face to face," while offering students career skills with University credentials that lead to jobs in Fisheries and Aquaculture.

6. Future Plans to Improve Student Learning

Applied Fisheries faculty will continue to evolve the engagement and evaluation of distance programs while continuing to develop semester intensive and lab based programing that prepares students for career opportunities over a short time period.

In the near future, the Fish Tech program will:

- Continue to offer high-impact learning opportunities to diversify student learning opportunities including Semester Intensives (third Alaskan Aquaculture Semester Fall 2023 and Fifth Alaska Dive Semester Spring 2024) and field lab practicums (FT 125. 150, 188, 189, 194, 212, 223, MTR 119, MTR 120)
- Offer additional Marine Transportation and maritime focused courses for the local community in Sitka based on growing demand and student surveys
- Develop metrics to better assess student learning in one credit lab and practicum courses which only include course participation as an assessment tool
- Continue to Enhance Dual Enrollment engagement of fisheries curriculum to High School students across Alaska including additional collaboration with Secondary School teachers and counselors to better ensure student success and assessment of learning
- Further utilize existing tools (Dual Enrollment Student Success Report SP 2022) and additionally evaluate student learning with respect to Dual Enrollment Students and Applied Fisheries offerings
- Develop tools to assess student success in traditional online courses that do not utilize external testing software and packages
- Promote professional development opportunities to Applied Fisheries faculty that enhance and focus on pedagogy and pedagogy development
- Pursue hiring an additional faculty member given continued program growth and success of semester intensive offerings in order to free up existing faculty time to further refine pedagogy, course content, and assessment of learning

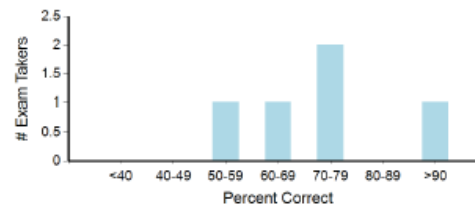## Appendix A. Example Assessment Reliability Report

SUMMARY REPORT

✔ **Exam**Soft   **OCN101 Exam 1**

Course: Oceanography • Instructor: • Questions: 74 • Exam Takers: 5

ASSESSMENT PERFORMANCE

71% **51%** **91%**

Average Score   Low Score   High Score
(52.6/74)   (38/74)   (67/74)

Total Student Performance Histogram

Assessment Score Reliability (KR-20)

0.0   0.91

| POOR | SATISFACTORY | GOOD |

Likelihood of students repeating the same performance.

Assessment Analysis: There are too few exam takers (<20) to draw conclusions. Please interpret Reliability data with caution.

LEARNING OUTCOMES   *(Category Performance)*   ◆ Low   ▲ Avg   ◆ High

IMPORTS

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| 0 | 50 | 100 |

AT RISK STUDENTS   *(Lowest 27% of Scorers on this Assessment Posting)*

StudentID	Last Name	First Name	% Correct
XXXXXXXX	XXXXXX	XXXX	51.3%

QUESTION PERFORMANCE   *(Items; Shows Up to 5 Distractors/Choices per Question)*

Seq #	Item ID	Item Stem	Correct	Upper 27%	Lower 27%	Point BiSerial	Disc Index	Response Frequencies A	B	C	D	E
1	1751	Which of the followi...	100%	100%	100%	0.00	0.00	0	*5	0	0	
2	1752	The ocean covers wha...	100%	100%	100%	0.00	0.00	0	0	*5	0	
3	1753	Approximately what p...	40%	100%	0%	0.74	1.00	*2	0	3	0	
4	1754	The Polynesians are...	20%	0%	0%	0.25	0.00	3	1	*1	0	
5	1755	The _____ were hig...	60%	100%	100%	0.20	0.00	1	*3	1	0	0

Appendix B. Summer 2018 Graduate Student Survey

When did you graduate?

2014-2015	1
2015-2016	2
2016-2017	5
2017-2018	6
I was just taking classes	7
I am still working on it	9

Are you working in the fisheries industry?

Yes   23 (77%)
No   7 (23%)

What organization do you work for and what is your job title?

AAE Tech Services. Fisheries Technician

ADF&G, Fishery Biologist I

Downeast Institute-Hatchery Tech

USGS research wildlife biologist

Chilkat Indian Association / Fish tech

US Coast Guard

Simon Fraser University, Research Assistant

Fish Tech II at the Hernandez Sport Fish Hatchery

Kodiak Regional Aquaculture Association, Fish Culturist

Fish and game, title- fish technician II

Valdez Fisheries Development Association (Solomon Gulch Hatchery)

Icicle Seafoods-Quality Assurance Manager

National Park Service, Regional Chief of Contracting

Coastal Villages Region Fund, Corporate Counsel

Anchorage Museum

Allen Marine whale tours: guest services

Prince of Whales Eagle Lodge - Charter Captain

SSRAA lead fish culturist

Kansas State University - Graduate Research Assistant

ODFW/Fish Tech

SSRAA - Lead Research Technician

NSRAA, Administration

Hotel. Desk receptionist

Saltwater INC - observer

US Fish and Wildlife Service

Kodiak Regional Aquaculture Association as a Logistics Tech

Port Armstrong hatchery-fish culturist

Do you feel like your Fish Tech education helped you prepare for your current career?

Yes	30 (100%)
No	0 (0%)

Have you taken any further education in fisheries/ marine sciences?

Yes	7 (24%)
No	10 (33%)
Not answered	13 (43%)