**Occupational Endorsement Certificate**

Marine Natural Resource Technician

**Academic Assessment Plan**

**Adopted by**

**The Biological Sciences faculty**

Reviewed with curriculum by the college committee: 9/15/23

Reviewed with curriculum by the dean: 9/16/23

Reviewed with curriculum by the Academic Assessment Committee as an information item: 11/3/23

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# Mission Statement

The mission of the Marine Natural Resources Technician program is to provide Alaskan students with the skills and knowledge necessary for successful employment at the technician level in marine natural resources and marine science through hands-on training and coursework.

# Program Student Learning Outcomes

Students graduating with an OEC in Marine Natural Resources Technician will be able to:

* SLO1: Complete basic techniques in marine science
* SLO2: Demonstrate an understanding of concepts and principles in marine natural resource activities
* SLO3: Demonstrate a basic knowledge of marine organisms
* SLO4: Demonstrate proficiency in basic math skills

# Measures

Table 1: Assessment Measures and Learning Outcomes addressed

|  | Complete basic techniques in marine science | Demonstrate an understanding of concepts and principles in marine natural resource activities | Demonstrate a basic knowledge of marine organisms | Demonstrate proficiency in basic math skills |
| --- | --- | --- | --- | --- |
| Demonstration of techniques of marine science | **x** | **x** | **-** | **-** |
| Course project | **x** | **x** | **-** | **-** |
| Lesson about a marine organism | - | **x** | **x** | **-** |
| Math exam |  |  |  | **x** |

Measure descriptions

● Demonstration of marine science technique: The student will demonstrate for the instructor a technique/skill utilized in natural resource management. This will take place in Biota of Alaska.

● Course project: Throughout Introduction to Oceanography, students will design, carry out, analyze, and report on a research project.

● Lesson about a marine organism: The student will develop and deliver a lesson about a marine organism. This will be carried out in groups of 2 or 3 during Introduction to Marine Biology.

● Exam: Students will demonstrate an understanding of basic math during Technical Math or Elementary Statistics

# Process

*Course level assessment:* Student assessment will be carried out throughout the program and within each course. The final student assessment will consist of the success throughout the courses, as evaluated by the performance measures. Students will also complete course evaluations, which instructors will use to evaluate the success of the course in maintaining student enthusiasm and interest. The course level assessments will be collected by the faculty of the individual courses.

Table 2: Assessment Measures and Courses in which Administered

|  | Biota of AK | Intro to Oceanog | Intro to Mar Biol | Technical Math/Elem Stat |
| --- | --- | --- | --- | --- |
| Demonstration of techniques of marine science | **x** | **-** | - | **-** |
| Course project | **-** | **x** | **-** | **-** |
| Lesson about a marine organism | **-** | **-** | **x** | **-** |
| Math exam | **-** | **-** | **-** | **x** |

*Program assessment:* Program assessment will begin in Summer 2024, after the first iteration of the program, and will continue each subsequent year. The program assessment will consist of analyses of student grades within each course, across courses, and throughout the program. Students will also complete pre- and post-program surveys and program evaluations, which the instructors will review annually. The number of students that apply to jobs related to natural resource management at the end of the program will be considered as well. Further, the instructors will write a short synopsis of how their course went, positive aspects and how it could be improved. The program level assessment will be collected and analyzed by the program coordinating faculty member. All instructors will meet within a month of the end of the program to discuss these, the program’s success, and/or possible improvements based on these lines of evidence. Based on these results, individual courses as well as program goals and practices will be modified for the next iteration. Changes may include:

* Individual course design
* Faculty teaching roles
* Student assignments
* Roles of external content experts
* Training facilities

Program faculty will also regularly meet with the advisory board to ensure training is up to date with their employment needs. These meetings will occur prior to the beginning of each new implementation. An example meeting schedule is:

* 1 month after program completion Faculty meeting, review outcomes and reflections
* 3 months after program completion Data analysis and UAA OA Report Preparation and Submission
* 3 months prior to next iteration Faculty meet with advisory board to review needs
* 2 months prior to next iteration Faculty meet to discuss/potentially modify curricula per meeting with advisory board and outcomes of previous iteration

Program faculty will also review the assessment plan annually, including the type and mode of data collection and analysis. Any suggested changes will be included in a modified assessment plan and submitted to the dean’s office and Office of Academic Affairs.

## Appendix A: Demonstration of techniques of marine natural resource management

**Measure Description:**

Throughout BIOL A124: Biota of Alaska, students will learn hard skills to be used in the workforce. At the end of each of this course, they will demonstrate a technique/skill utilized in marine natural resource management for the instructor that they learned throughout the course. The demonstration will be based on learned course material and will be graded based on the below criteria:

* Understanding of the technique/skill and purpose for it
* Complexity of the technique/skill
* Accuracy of technique/skill
* Precision of the technique/skill
* Efficiency of time carrying out the technique/skill

Each of these criteria will be graded on a 10-point scale, with 0 being completely inadequate to 10 being exceptional. These scores will then be tabulated into a percentage

* 90-99% Exceptional
* 80-89% Superior
* 70-79% Competent
* 60-69% Improvement Needed
* Less than 60% Inadequate

**Factors that affect the collected data:**

Factors that affect the data for this measure include:

* Basic comprehension of the technique/skill
* Proficiency in carrying out the technique/skill
* Comprehension of the assignment
* Student’s time and effort put into the completion of the assignment
* The instructor’s explanation and demonstration of the technique or skill

**How to interpret the data**

Results can be compared to the student’s efforts in other aspects of the course to gain insight into general interest and engagement level. They can also be compared to other students’ outcomes, as well as outcomes across the program. This will allow understanding of the student’s interest and comprehension of the course material as compared to this particular measure, as well as compared to the comprehension of other students.

## Appendix B: Course Project

**Measure Description:**

Course project: Throughout Introduction to Oceanography: BIOL A179, students will develop, design, carry out, analyze, and present an individual project. This project will relate to oceanographic topics and skills discussed in the course. It will also be developed and carried out in such a way as to demonstrate the student’s understanding of the Scientific Method. The project will be graded based on the following criteria:

* Completion of the project
* Complexity of the design
* Accuracy of the implementation of methods based on design
* Appropriate analyses
* Completion of the presentation

Each of these criteria will be graded on a 10-point scale, with 0 being completely inadequate to 10 being exceptional. These scores will then be tabulated into a percentage

* 90-99% Exceptional
* 80-89% Superior
* 70-79% Competent
* 60-69% Improvement Needed
* Less than 60% Inadequate

**Factors that affect the data collected:**

Factors that affect data collected for this measure include:

* Comprehension of the Scientific Method
* Ability to design and analyze a study to address a question
* Comprehension of the assignment
* Student’s time and effort put into the completion of the assignment
* The instructor’s explanation and demonstration of the technique or skill

**How to interpret the data**

Results can be interpreted by the instructor determining if the study design and analyses address the question. This will show the student’s comprehension of the Scientific Method. The presentation can also be interpreted in relation to the study design and implementation, such that a poor presentation after a great study may illustrate an understanding of the Scientific Method but a poor understanding of the necessity for presentations or vice versa. Results will be compared to student’s efforts in other courses and other student’s efforts. This will allow understanding of the student’s interest and comprehension of the course material as compared to this particular measure, as well as compared to the comprehension of other students.

## Appendix C: Lesson about a marine organism

**Measure Description:**

Lesson about a marine organism: The student will develop and deliver a lesson about a marine organism. This will be carried out singly or in groups of 2 or 3 during Introduction to Marine Biology: BIOL A150. The groups will choose a marine organism important to the Alaskan marine environment and/or marine natural resources. They will then develop how they want to deliver the content to the class, which may include lecture, activity, or discussion. During class time, the groups will deliver their lesson to the class. The lesson will be evaluated based on the following criteria:

● Conveys a good understanding of the organism

● Clear and understandable explanations of the organism, with images, videos, tables, etc

● Engaging lesson

● Use of multiple resources

Each of these criteria will be graded on a 10-point scale, with 0 being completely inadequate to 10 being exceptional. These scores will then be tabulated into a percentage

* 90-99% Exceptional
* 80-89% Superior
* 70-79% Competent
* 60-69% Improvement Needed
* Less than 60% Inadequate

**Factors that affect the data collected:**

Factors that affect the data collected for this measure include:

* Student comprehension of the marine organism
* Student creativity in delivery method
* Student enthusiasm for and interest in the material
* Comprehension of the assignment
* Student’s time and effort put into the completion of the assignment
* The instructor’s explanation and demonstration of the technique or skill

**How to interpret the data**

Results will be compared to student’s efforts in other courses and other student’s efforts. This will allow understanding of the student’s interest and comprehension of the course material as compared to this particular measure, as well as compared to the comprehension of other students.

## Appendix D: Math Exam

**Measure Description:**

At the end of the semester of Technical Math: MATH A101 or Elementary Statistics: STAT A200, students will complete an exam on topics covered during the course. The exam will be evaluated based on the following criteria:

* Accuracy of answers
* Work towards the answers

Each of these criteria will be graded on a 10-point scale, with 0 being completely inadequate to 10 being exceptional. These scores will then be tabulated into a percentage

* 90-99% Exceptional
* 80-89% Superior
* 70-79% Competent
* 60-69% Improvement Needed
* Less than 60% Inadequate

**Factors that affect the data collected:**

Factors that affect the data collected for this measure include:

* Student comprehension of the concepts
* Student’s time and effort put into understanding the material
* The instructor’s explanation and demonstration of the concepts

**How to interpret the data**

Results will be compared to student’s efforts in other courses and other student’s efforts. This will allow understanding of the student’s interest and comprehension of the course material as compared to this particular measure, as well as compared to the comprehension of other students.