Fisheries Technology
Assessment Report

Academic Year
2018 - 2019

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University of Alaska Southeast (UAS) Fisheries Technology program (Fish Tech) Assessment of Student Learning Outcomes (SLO) Report for Academic Year (AY) 2018-2019.

1. Program Overview

The Fisheries Technology Program (FT) is an industry driven applied program that focuses on career training to put students to work. The FT program is the only one and two-year, entry-level academic program in fisheries in the UA system. The mission of the FT program is to provide students with a broad educational and practical foundation in the field of fisheries. Students will be prepared for entry level employment in federal or state agencies, private-non-profit salmon enhancement facilities (PNPs), and various private fisheries sectors. 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 Assessment plan is for the Fisheries Technology AAS, the two Certificates (Alaska Salmon Enhancement, Fisheries Management) and the two Occupational Endorsements (Alaska Salmon Enhancement, Fisheries Management).

2. Program Student Learning Outcomes

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 Student Learning Outcomes

The Fish Tech program has detailed Student Learning Outcomes (SLOs) that are hierarchically nested from the individual lesson, to the course, to the program level. In fall 2014, we established the SLOs for each of our core courses in accordance with a university-wide effort through the UAS Undergraduate Curriculum Committee. In fall 2016, we established SLOs for each lesson/module of each of our courses and began making those SLOs available to students via course syllabi (Appdx A). In fall 2016, we established the Fish Tech Annual Assessment document that outlines the results presented here. As part of this SLO assessment, we collect data on student learning via exam scores, summary reports of exam effectiveness (Appdx B), comparison of pre and post course exams (Appdx C), student evaluations (Appdx D), and survey of program graduates (Appdx E). New methods of evaluating student learning in 2018 and 2019 include the introduction of writing assignment and creative projects (Appdx F) across the majority of our curriculum, as well as the development of Occupational Endorsement for semester intensive programs.

4. Data Collected on Student Learning Outcomes during the 2018-2019 academic year

Student exam scores – Though exam scores do 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.

Fall 2018 – Mean grade percentage 84.74 ± 2 SE % (n=205)
Spring 2019 – Mean grade percentage 84.70 ± 1 SE % (n=308)

Summary reports of exam effectiveness – For this academic year, most of our students took exams using a software package called ExamSoft. This application allows us to look at

certain analytics that help us in determining assessment reliability. Each exam is scored based upon the likelihood of a student repeating the same performance. An example Summary Report can be found in Appdx B. We continue to modify our exams to increase reliability for those with low scores.

Assessment Reliability AY18-19	Exam 1	Exam 2	Exam 3
FT 120	70	88	90
FT 122	72	65	66
FT 211	89	97	81
FT 222	86	75	76
FT 272	70	85	79
FT 274	94	71	58

Pre and Post exams scores – To determine what students learned during their course, we began implementing pre and post exams for all Fish Tech courses (n=202 students). Students were given a 30 question exam prior to receiving any content in each class, and at the end of the course, students were given the same exact exam. Course by course breakdown of pre and post exam scores can be found in Appdx C.

Mean scores for pre exams were were 61.6 ± 2.6 SE %

Mean scores for post-exams were 84.6 ± 0.9 SE %

Mean improvement between pre and post exams was an increase of 41.6 ± 4.1 SE %

Student Evaluations – Though student evaluations do not explicitly relate to knowledge gained by students, they do allow us to evaluate successes and failures of 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. Example in Appdx D.

In fall 2018 (n=45 surveys)

96% of students said they would recommend this course to a friend

86% of students said they found their course valuable

74% of students said they would take another course

In spring 2019 (n=68 surveys)

95% of students said they would recommend this course to a friend

88% of students said they found their course valuable

80% of students said they would take another course

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 E)

Writing Assignments and Creative Projects
New in Spring 2018, Fish Tech faculty increased assessment of student learning via Writing Assignments and Creative Projects. As part of the OCN 101 – Introduction to Oceanography course, students were required watch 13 lectures, each of which had paired Reading and Writing Assignments. Until Spring 2018, most of the Fish Tech faculty evaluated student learning based upon three exams and pre and post-exams. By introducing Writing Assignments to this course, Fish Tech faculty were able to assess student's ability to synthesize information from the lecture and Reading Assignment (Appdx F) and develop informed answers. In addition, every four lectures, students were assigned a creative project (3 total for the semester), where students had to "re-teach" a segment from one of the lessons using technology or skills that students had or could readily learn. By introducing Creative Projects (Appdx F) to this course, students created "artifacts of learning," and were in essence, teaching content, one the highest levels of learning according to Bloom's Taxonomy. The introduction of Writing Assignments and Creative Projects also allows students to have a diverse set of learning opportunities and reduces the pressure on students that do not score well on exams. With the success of this implementation in 2019 Fish Tech faculty have now initiated paired Readings and Writing Assignments as well as Creative Projects to 60 % of the Fisheries Technology curriculum.

Certifications for semester intensives
As a result of end of year student surveys reviewed by Fish Tech faculty members, in Spring 2018 Fish Tech faculty created a sequence of courses designed as a semester intensive. This intensive was designed so that students could come to Sitka for "hands-on" courses in a unique sequence that could be completed in a single semester. In Spring 2018, the Fish Tech program piloted a semester intensive suite of courses called the Alaska Dive Semester, where students from all over the country, came to Sitka, completed six courses and 12 credits of coursework in 3.5 months. In addition to receiving college credit for the courses, the 13 students earned a total of 143 external certifications. Different from most of the distance courses taught by the Fish Tech program, student learning was assessed via satisfactory demonstration of "skills practicals," which when complete, allowed for national and international certification. This curriculum has since been vetted through the curriculum process, allowing successful completion of this course sequence to result in a University recognized Occupational Endorsement in Scientific Diving. The success of this model allowed for the creation of two additional Occupational endorsements (Alaska Salmon Enhancement and Fisheries Management) where students success and learning are to be assessed through traditional exams, pre and posttests, and hands on skills practicals. These programs will begin in Fall 2002.

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

In AY2018-2019, the Fish Tech program increased its previous record with a Student Head Count of (n=396) and Student Credit Hours (n=1,023). We again were the most comprehensive in assessing student learning during this academic year.

Exams scores for this academic year averaged in the B+ range and testing software assessed an average of 84% of our students would likely repeat the same performance on their exams.

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 were approximately 62% and post-test scores around 86%, When examined individually these data suggest student knowledge improved by approximately 40% by the end of their courses.

Almost all of the students that completed end of course surveys (approximately 1/3) said that the found the courses informative, would take another course and would recommend a Fish Tech 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 have allowed faculty other tools to assess student learning and allows students to enhance their education using different types of tools. These addition tools were widely popular with students because they felt like they learned the materials in a more in-depth manner and it allowed them to apply theoretical information to their personal life and experiences.

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.

6. Future Plans to Improve Student Learning

In the future, Fish Tech faculty will continue to evolve the engagement and evaluation of distance programs while continuing to develop semester intensives that prepare students for career opportunities over a short time period.

In the near future, the Fish Tech program will be doing the following:

- Development of "instructor presence," in the remaining FT 211 – Fisheries Management Techniques, FT 270 – Freshwater Ecology, and FT 272 Fisheries Management Techniques with hopes of increased student engagement and the potential to assess student learning via exams, pre and post exams, creative projects and writing assignments
- Continued Semester Intensive offerings including, Fall 2020 Alaska Salmon Semester and Spring 2021 Alaska Dive Semester

- Enhance Dual Enrollment offerings 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
- Pursue a part time marketing and recruitment position to free up additional faculty time to refine pedagogy, course content, and assessment of learning

Appendix A. Example Detailed Course Outcomes Summary

Course title: FT 274 Fisheries Biology (3cr)

Course description: An introduction to the major groups of fishes with particular emphasis on fishes of the Pacific Northwest region of North America. Introduces students to finfish and shellfish. Identification and classification, anatomy and physiology, age and growth, reproduction and behavior will be studied. Emphasis will be placed on commercially important fish species of Alaska.

Course Learning Outcomes (Modules that address CLOs)
  1. Describe how fish swim and regulate physiology with the environment (Module1, Module2, Module4, Module7)
  2. Describe how we classify fish (Module3)
  3. Describe how fish breathe (Module5)
  4. Describe how fish grow and reproduce (Module8, Module9)
  5. Describe how fish interact with the environment (Module10, Module11)
  6. Describe the biology and fisheries ecology of invertebrates in Alaska (Module12)

Module and Student Learning Objectives (SLOs)   Module time: (hr:min)

Module 1: How to use iPads and elearning modules   Module time: (00:19)

Module 2: Class Introduction - Fisheries Biology   Module time: (01:12)
Student Learning Objective (SLO)   Time (min)
  1. Describe the basic objectives and grading scheme of this course   (07)
  2. Describe your instructor . . . without using any bad words!   (09)
  3. Describe what makes saltwater unique for fish   (15)
  4. Describe where fish live   (17)
  5. Describe the general subjects covered in this course   (22)

Module 3: Fish Systematics, Genetics, Speciation   Module time: (01:31)
  Student Learning Objective   Time (min)
  1. Define the general terms about systematics of fish.   (04)
  2. List the five methods of categorizing fish groups.   (09)
  3. Describe how species evolve via allopatric and sympatric speciation.   (11)
  4. Describe the early stages for fish evolution.   (09)
  5. Describe major characteristics of the "Jawless" fish - Agnathans (Lamprey and Hagfish).   (13)
  6. Define the major groups that make up the "Jawed" fish and give details about each group. (20)
  7. Describe general characteristics and the two main groups of the Bony Fish.   (03)
  8. Describe major characteristics of the "Lobe-Finned" fish.   (08)
  9. Describe major characteristics of the "Ray-Finned" fish   (09)
10. Describe major characteristics of the Teleosts.   (04)

Module 4: Fish Structure (form) and Function   Module time: (01:19)
  Student Learning Objective   Time (min)
  1. Describe the eight basic categories of fish body shape.   (18)
  2. Describe the six basic body plans of fish swimming.   (14)
  3. Differentiate the four different types of scales and which belong to which fish.   (07)
  4. Describe the purpose of each fish fin and how fins play an important role in fish ecology.   (17)
  5. Describe the function of the skeleton, spines and head.   (05)
  6. Describe how the eyes, mouth and gills can explain fish ecological traits.   (06)
  7. Differentiate the function of white vs. red muscle.   (06)
  8. Describe three different types of swimming.   (05)

Module 5: Respiratory and Circulation   Module time: (00:51)
Student Learning Objective   Time (min)
  1. Describe the anatomy and function of the fish gill.   (07)
  2. Describe the two types of gill ventilation and describe how fish extract oxygen from the water. (05)
  3. Describe the other ways that fish can breathe other than using gills.   (10)
  4. Describe the bodily processes that depend on oxygen extraction.   (03)
  5. Name four different things that can determine how much oxygen a fish will need.   (05)
  6. Describe fish blood and cells and differentiate from our blood.   (11)
  7. Define oxygen affinity, Bohr effect, Root effect, P50 and PCO2.   (05)
  8. Explain circulatory control in fish (heart structure and type of circulation.   (05)

Module 6: Exam 1

Module 7: Buoyancy, Thermoregulation and Balance   Module time: (01:15)
Student Learning Objective   Time (min)
  1. Describe the four ways that a fish can achieve neutral buoyancy.   (14)
  2. Differentiate physostomus and physoclistous gas exchange and describe how they work.   (11)
  3. Describe the role of the rete mirable and issues with dumping air quickly on ascents.   (04)
  4. Describe the two ways fish can alter their internal temperature and be able to discuss
      what regional endothermy is.   (08)
  5. Describe the challenges associated with fresh and saltwater fish in relation to
    osmosis and ion regulation.   (14)
  6. Describe how each of the three main fish groups deal with osmotic issues.   (06)
  7. Describe how each of the three main fish groups deal with ionic issues and detail the changes
    of diadromous and euryhaline Teleosts.   (06)
  8. Describe what kind of stressors fish can face and how they deal with them.   (11)

Module 8: Feeding and Growth   Module time: (01:40)
Student Learning Objective   Time (min)
  1. Define the basic terms associated with fish feeding habits and food selectivity.   (03)
  2. Describe the relationship between gut length and fish diet and define the role of the pyloric caeca. (09)
  3. Describe the three basic types of fish feeding.   (14)
  4. Describe the different mouth types and associate feeding.   (04)
  5. Describe the differences in gill rakers for different types of feeding.   (06)
  6. Describe three basic requirements of fish nutrition.   (05)
  7. Describe three basic requirements of fish nutrition.   (19)
  8. Describe the major factors that affect fish growth.   (23)
  9. Describe the four ways we measure fish growth.   (16)

Module 9: Reproduction   Module time: (01:26)
Student Learning Objective   Time (min)
  1. Define the basic terms associated with reproduction and differentiate male
    and female sex organs in each of the three major fish groups.   (11)
  2. Define sexual dimorphism and dichromatism and give examples of each.   (07)
  3. Describe the Non-Guarder reproductive class and give examples.   (09)
  4. Describe the Guarder reproductive class and give examples.   (08)
  5. Describe the Bearer reproductive class and give examples.   (06)
  6. Differentiate the three main modes of reproduction in fish.   (08)
  7. Differentiate the main four mating systems in fish.   (07)
  8. Describe what r vs K selection means and how it relates to fish age, number of offspring,
      frequency of breeding, etc.   (06)
  9. Describe the five major developmental stages for fish.   (05)

10. Differentiate direct and indirect development in fish and describe the role
    the environment may play.   (05)
11. Describe the five factors that contribute to the variation in fish development.   (06)
12. Differentiate the three alternative reproductive strategies and give examples of each. (05)

Module 10: Exam 2

Module 11: Sensory Perception, Behavior and Communication	Module time: (01:49)
Student Learning Objective	Time (min)
1. Describe how water impacts vision, sound and smell for fish.	(13)
2. Define olfaction for fish and describe the organs responsible.	(07)
3. Define gustation for fish and describe the organs responsible.	(08)
4. Describe how a fish hears.	(14)
5. Describe how the lateral line in fish works.	(07)
6. Describe how fish see.	(11)
7. Describe the theory of optimal foraging and how it applies to fish.	(29)
8. Differentiate a fish school from a shoal and describe the purpose of each.	(20)
9. Describe the role of rheotaxis, electroreception, and magnetoreception.	(06)
10. Describe the 8 color patterns in fish.	(12)

Module 12: Introduction To Fish Ecology	Module time: (00:56)
Student Learning Objective	Time (min)
1. Define each of the ecological filters and sequence by order.	(07)
2. Define fundamental and ecological niche and discuss impacts for species richness.	(06)
3. Define food webs and discuss their importance in the ecosystem.	(09)
4. Define and give examples of keystone species.	(08)
5. Define top-down and bottom-up interspecific and intraspecific interactions.	(09)
6. Define and give examples of character displacement, interference competition, exploitation competition, and habitat imprinting.	(05)
7. Define and give examples of symbioses, mutualisms, commensalisms, and parasitisms.	(12)

Module 13: Invertebrates	Module time: (01:14)
Student Learning Objective	Time (min)
1. Describe the basic ecology of arthropods and describe each of the groups.	(23)
2. Describe the major arthropod fisheries in Alaska.	(11)
3. Describe the basic ecology of molluscs.	(13)
4. Describe each of the mollusc groups and the fisheries.	(08)
5. Describe the basic ecology of echinoderms and describe each of the groups.	(10)
6. Describe the echinoderm fisheries in Alaska.	(04)
7. Describe the diversity of nudibranchs.	(03)

Module 14: Exam 3

Appendix B. Example Assessment Reliability Report

SUMMARY REPORT

✔ **ExamSoft**   **FT120 - Exam1 - Fall18**

Course: Fisheries of Alaska • Instructor: Dr. Reid Brewer • Questions: 58 • Exam Takers: 16

ASSESSMENT PERFORMANCE

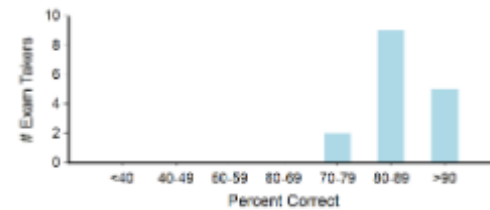**87%**   **71%**   **95%**

Average Score   Low Score   High Score
(50.3/58)   (41/58)   (55/58)

Assessment Score Reliability (KR-20)

0.0   0.67   1.0

▼

| POOR | SATISFACTORY | GOOD |

Likelihood of students repeating the same performance.

Total Student Performance Histogram

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

FT 120 - Exam 1

➤ Crab fisheries in Alaska

➤ Biology

➤ Fisheries

➤ Management

➤ Introduction to Fisheries of Alaska

➤ Biology

➤ Fisheries

➤ Management

➤ Pacific Halibut
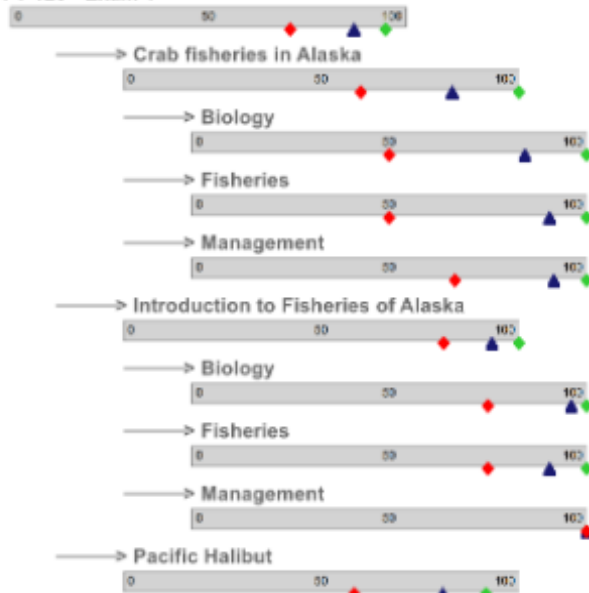
Students are asked to take a 30-question test (Pre-test) before watching any of the course lectures. At the completion of the course, students are given the exact same test (Post-test) to evaluate learning. In Fall 2018, 99 students participated in the survey, In Spring 2019, 103 students participated.

Fall 2018 - Pre and Post exam scores

	students	Pre-test %	Post-test %	% change
FT 120	13	70 ± 2 SE	88 ± 3 SE	38 ± 3 SE
FT 211	31	57 ± 5 SE	72 ± 4 SE	28 ± 5 SE
FT 272	29	62 ± 7 SE	88 ± 3 SE	38 ± 6 SE
FT 274	6	61 ± 4 SE	93 ± 2 SE	42 ± 3 SE
OCN 101	20	56 ± 1 SE	85 ± 2 SE	37 ± 3 SE

Spring 2019 - Pre and Post exam scores

	Students	Pre-test %	Post-test %	% change
FT 120	23	66 ± 2 SE	90 ± 3 SE	44 ± 6 SE
FT 122	17	74 ± 3 SE	85 ± 2 SE	26 ± 7 SE
FT 222	9	65 ± 4 SE	83 ± 3 SE	33 ± 8 SE
FT 274	13	58 ± 5 SE	86 ± 2 SE	42 ± 6 SE
OCN 101	41	54 ± 3 SE	89 ± 3 SE	40 ± 9 SE

132 students took 244 classes * 3 for a total of 732 credits (n=113 surveys)

1. ## Was the semi-asynchronous format useful to you
   Yes – 85.84%
   No – 1.77%
   Maybe – 14.16%

2. ## If other courses were offered in this format would you be interested?
   Yes – 76.11%
   No – 4.42%
   Maybe – 19.47%

3. ## Which course(s) did you take

Course	
FT 120 - Fisheries of Alaska	40
FT 122 - Alaska Salmon Culture I	17
FT 210 - Fisheries Management Techniques	11
FT 222 - Alaska Salmon Culture II	9
FT 272 - Fisheries Management, Law and Economics	11
FT 274 - Fisheries Biology	25
OCN 101 - Introduction to Oceanography	54

Would you recommend the iPad format for Fish Tech courses to a friend? Why or why not?

- Yes
- Yes! I love the at my own pace schedule and would recommend it to any of my full time working friends or relatives.
- I would for anyone with a busy schedule or lives remote. I also would to anyone that wants to learn stuff. Many uses.
- Of course I would. It's a great alternative to live or traditional online classes which allows you to work / live remotely and complete these classes. It is also really nice to be able to rewind and re-listen to different parts of lectures if you quite didn't understand something or if you want a refresher before taking an exam.
- Yes, because getting an education does not require going to lecture for a semester.
- Yes because it is very convenient and the coursework is interesting.
- Yes, allows for your own pace.
- Absolutely, the course was very easy to complete on my own time.
- Yes. It's super convenient to use and take places.
- Yes I would because It is great easy And at your own pace
- Yes because it is simple to do and easy to access
- Maybe. Some lectures had poor recording and audio quality, which was more than annoying. And I would hope that data being used in the classroom setting is more current than what is used in the iPad course
- Yes I would recommend this format to a friend. In fact I already have. This Is Class is available to people in rural Alaska that have busy lives.
- Yes, however there were a few times the video didn't line up with the screen and so tiny bits of graphs were not visible.
- I would. This was just such a great way to take a course. My first time, but I really enjoyed the iPad.
- Yes, because the only time constraint is the course end date

- ABSOLUTELY! This is my first time taking an iPad course and I loved it!
- Yes. Being able to take this course on my own time has been amazing! I don't think I could have done it otherwise.
- yes
- Yes, I enjoyed the content and the freedom to do the work at your own pace. It makes it possible for working and active people to obtain the knowledge they need to pursue different opportunities that would not be possible otherwise.
- Yes and I have to coworkers looking to move up in the industry. Classes are much easier if you've already got some work experience
- Yes for some classes and no for others. Some of the classes overlapped in what was taught. But other than that I had really great classes over all I would. Sorry for my ranting
- Yes. I look forward to doing more classes on the iPad. It makes it easier to juggle family work and school. I also like the fact that I can rewind and re watch lectures if I didn't quite understand something. Very helpful for studying prior to the exams.
- Absolutely. It was very informative. Even my husband would listen in at times and thought it was excellent information.
- Yes. Because it's fits into anybody's schedule.
- I have actually recommended this class already. It was easy to use, easy to take anywhere, and also just kind of fun to take a class on an iPad.
- Yes, it was a good course, very well set up and easy to understand.
- N/a
- Definitely not. I work much better on my own computer. Constantly having to send myself an email with my projects, lose formatting, and watch a lecture from a tiny, tiny screen was absurd. Sometimes, the graphs or what was being presented would not even be readable from a tiny iPad. The projects to be used from the iPad apps was incredibly hard. I would certainly recommend this format if one of my friends wanted to take this class and was unable to match class meeting times.
- Yeah, it was easy to use and you can do it on your own time
- Yes, but only if their comfortable with technology.
- I would, just because it's a much different way to take a class that I've never tried before.
- Yes! I love having an iPad to use for the course as well as the freedom to study as it works for me.
- For any that are interested, I absolutely would. It is a fun new style of learning that allows the individual to be in charge.
- Yeah! It teaches you a lot about technology, you can do it without internet, it's portable and easy to navigate as well,
- Yes I would. If they are looking for a class that is doable and easy to finish in a short amount of time it would be perfect. The class isn't necessarily hard which makes for a capable experience to get ahead in credits or finish early.
- Yes I would. I thought the expectations for the class were laid out very clearly and I learned a lot from the class. I would 100 percent recommend oceanography to people.
- I would recommend this iPad format for a friend because I found it to be easy to use and the instructions were clear with the assigned work for each week.
- Absolutely! The self-paced schedule and outstanding content is perfect for those who don't have predictable schedules or internet connections.
- yes, at your own pace and convenient
- Yes and no. I found it discouraging at some points that I was not able to ask questions directly to a professor in the moment. It was a course that allowed flexibility as to when the material was completed. Though I understand study of marine ecology is part of oceanography, I am not a person who is interested in studying marine life (at this point in my life) and would've rather the focus have been on concepts I was having difficulty committing to memory or understanding. Exercises and work pages understanding ocean movement or sediments would have been beneficial instead of just several reports.
- Yes, because it allowed me to more comfortably take a full time student amount of credits this semester
- Definitely, it was convenient and a great way to learn fisheries technology material in Alaska
- Same As 4

- Yes, if they wanted an online class I would have told them about this class because this class gives you an IPad that you can take anywhere and is super convenient.
- I definitely will and already have. There is a fish culturist that works at my hatchery who has been expressing interest in the salmon culturing classes. This type of format is great for my staff because they do not require internet connection to gain additional knowledge in a subject they are passionate for.
- Yes, I would. The iPad classes work great for people with a busy schedule.
- Yes. It's fun, its more accessible, and you can travel more and always have your classes regardless of if there's internet or not.
- Yes, the course was informative and the self-paced format allowed me to fit it in my schedule along with work and family commitments.
- Yes, Definitely. The flexibility to go at your own pace and rematch certain more complex lectures to make sure one is absorbing and understanding the content. Having worked in the fishing industry for over 30 years I found the vast majority of the information that I was familiar with to be very accurate. These courses provided a deeper grasp of the concepts and history of fishery technology work.
- Yes because you can take it anywhere
- Yes! I was hesitant but loved it. The only issues I ran into was uploaded my creative assignment. Other than that it was smooth and easy to carry while traveling for work.
- N/A
- Yes! This class is mandatory for my job and now I see why; the remote class opportunity makes it accessible to all and easy to fit with any schedule and the level of education I felt was still at a high standard.
- Yes, same answer I always give in all the other surveys
- Yes- easy to navigate and maintain good grades in class while remaining flexible
- Definitely for the reason mentioned in question 2
- Of course I would. I can't emphasize enough how great this programs been for my ultra-busy lifestyle and circumstances imp in currently. Great form of education going on here, from the course layouts and design to the professors offering support, I'd recommend it to anyone that needs a distance learning option.
- Yes, it worked with my schedule and was very straight forward.
- Yes, because it is an easy class for those who have a busy schedule.
- Yes. It's easier to carry than a book. If you have to take a class online this is much cheaper than a book.
- Yes because its better set up then some online classes and you can take it anywhere. Also, don't have to worry about needing service that much.
- I would definitely recommended. Was a very well thought out course and easy to follow.
- No. But only because this format of learning to me is very disconnected from not only the Professor but also the lack of interaction with other students.
- Yes because you can learn at your own pace.
- Yes because it makes it easy to do anywhere
- I was recommended by a friend and I have recommended it to several people, it is a wonderful format and it is great for the summer and being able to work at one's own pace.
- Yes, because they are available to work without an internet connection. If you have issues you can speak with the instructor via phone or email, aside from calling them for the test passwords.
- I would recommend the iPad format of these classes to friends because you can do it from home.
- Yes I would. It was well put together, the content was good and the iPad allowed me flexibility
- Absolutely, super covenant.
- Yes, I would recommend the iPad format for Fish Tech courses to a friend because pads are easy to pack with you if you have a busy schedule every day.
- I would, I liked this better than regular textbook reading because it was more convenient and flexible.
- Yes. Its portable, at your own pace, you can work in a remote area and still be able to do your classes
- I would definitely recommend this format to a friend because it allowed me to work on the class at anytime, anywhere. I thought that made the class very enjoyable.
- Yes, the iPad classes are fun and easy.
- Yes due to being able to do it at your own pace.
- N/A
- I would because it is a unique course and is unlike any other class I have attended.

- I prefer blackboard because the grades for assignments are much easier to find.
- Yes- easy to use and program was useful
- Yes I would. It allows you to work whenever you want and it allows you to work at your own pace
- Yes, as long as you are an independent learner because you don't need to go to a certain place so you can listen to someone talk and teach you when you can learn wherever you want wherever it's convenient.
- Yes, if any of my high school friends were going to take an oceanography course, I would recommend the iPad format. I found it very convenient that the course was already pre-loaded, so I could work on it out of cell service, on commercial flights, etc. Definitely would recommend.
- I would defiantly recommend it. The iPad format was very helpful, and easy to understand. The lectures were all downloaded so I could take it with me wherever I went even when I had bad service. I was even able to do some of the work on an airplane! Also, it really helped that the coarse was self-paced. I was out of town for a few weeks this semester, and didn't always have time to work during that time. Rather than missing several days' worth of class however, I was simply able to do extra work for a few days and get right back on track. This was extremely beneficial so that I didn't miss any of the lessons, and for people who have a busy schedule and can't commit to an on campus class, this format would work well.
- Absolutely. The course was very well done and I learned a lot. Additionally, the course was very good in terms of self-pacing and workload.
- Yes, it was Convenient not only for this class, but also for all of my other college classes.
- Depends on what they're looking for. For me it was a great introduction, but if I wanted a more personal experience or to pursue this area further I'd want to take a class in person.
- Yes, it a good experience to have done and gives information surprisingly well.
- I would recommend taking this class on iPad because it is less stress and you have a lot of time to do it, but you also get to learn about different fish species doing this class.
- Yes, it is very organized. It was a new experience for me and I really enjoyed it.
- Yes I would recommend the iPad format to a friend because as long as you put some time in and do the class it is an easy way to take it.
- I would...if that friend was motivated, self-disciplined, and truly interested in the material. As someone who possesses those qualities, I found it manageable to balance work, 14 credits, and personal life... However, if I was not wired that way, I feel it could be a struggle without a traditional classroom format. This of course, would also be different depending on the course. For the right type of student and/or appropriate workload, yes, I would recommend it!
- No, I prefer to use my own technology for online classes
- Yes because you can do it on your own time. Plus you can take your time with the lectures and not miss anything.
- Yes, it is easy to follow and do at your own pace.
- Absolutely, it makes access to the whole course so much easier then carrying around note books and text books. Plus I could check my email.
- I would recommend it. I liked the way that all of the material for the course was together on the iPad. It think it makes it easier.
- I would definitely recommend the iPad format to a friend. I think it is a great first college class experience and it is very self-paced and easy to understand which is nice. The iPad's make it much quicker and easier to complete because you don't have to log in or download anything. However, the iPad's are starting to become slightly dated and while they still work, the battery does not keep a charge. Overall a great setup.
- Yes, the iPad format was very easy to use!
- I would only recommend it to someone who was interested.
- Only why not. Because I can't get any more apps to play games? And can't update anything, otherwise it's cool,
- Sure. It is nice course to give you college experience (coming from a freshman). Also everything is at your disposal.
- I like using an iPad, it's flexible for when you do it, so yes.
- Yes, I would because this platform make studying more efficient and effective. All the lessons are very well taught and they are very interesting.
- Yes it was a fun class you can do from home.

- I would definitely recommend the iPad format to a friend because it was easy and interesting to do. And I know if enjoyed it then my friends definitely would.
- I would because having all my books and assignments loaded onto here helps to prevent lugging around heavy textbooks and assignments that could get lost.
- Yeah, it's a great way to learn what goes on at hatcheries. Even though I currently work at one as a culturist, I've learned a great deal about the reasons our hatchery does things a certain way.
- It's nice and keeps the work separate from my other school work. The battery life is also amazing and that I don't need wife to access things makes it very versatile. However it's also hard to learn from videos with limited questioning or interaction.
- Absolutely! What a great way to gain education while away from AK

5. What did you like best about the courses?

- Convenience to carry the class and listen and watch the lectures The videos were good, but not enough of them
- Concise and personable. Sometimes the information comes at you pretty fast, but all together very thorough. Good job Joel that was a lot of talking..??
- Interesting, challenging, knowledge, fun
- The content in general. It was very informative and very practical for the industry we are focusing on.
- The pictures of the marine animals, so cool! I liked that the modules were divided into several mini lectures, lasting a few minutes. I preferred this compared to other FT courses where lectures were often 15+ minutes.
- The Format of the whole class is very neat and structured.
- Na
- Unsure, but I really enjoy the subject.
- The ability to work on the class whenever I want.
- That I finally finished it.
- The jokes in the modals
- Something new to learn
- Since I am not from Alaska, learning about salmon was more than interesting. Joel's lectures were probably the best.
- I enjoyed the teacher and the lectures that were given. Previous classes don't have lectures and instead have written coursework. The connectedness with the teacher was helpful especially having assignments with articles to do.
- Take at my own pace as I work.
- There wasn't one thing. I thought Dr. Brewer was great with feedback and assistance; the material was varied and relevant and not to mention interesting; and it was apparent that a lot of effort went in to designing and executing the lectures.
- Subject matter expertise of the instructors
- I really enjoyed the mixed presentations/lectures professor Brewer did - well done! It was all very interesting.
- Engaging, fun instructor, interesting topics, being broken into separate modules was helpful. Good photos for reference, pretty great.
- applying it to my job working for fish and game
- I still haven't finished the Biology 274 yet but I am enjoying it more after I got through the first portion. As for the FT120 It was great since I've always been somewhat obsessed with fisheries and fisheries management since I moved to Alaska 15 years ago. I've learned a lot through self-research and talking to ADF& G people but this course filled in a few of the spots I didn't know and reaffirmed what I learned on my own. There is so much more to learn so I'm looking forward to that.
- Self-paced
- I could take them at my own speed and that the staff is really helpful and nice. They are willing to put up with my BS thank you.

- I believe the instructor structured the class very well and he was very easy to listen to and retain the information given. Very good delivery method, I liked the pictures and visuals to go with everything. I also liked how specific it was to Alaska.
- I could do them on my own with the iPad, especially while traveling for work. Everything was preloaded and I didn't need internet for the courses.
- You have an option to learn whenever and wherever.
- I enjoyed the readings and the writing assignments.
- Nothing
- That it didn't have scheduled meeting times since I do have work and No internet
- N/a
- I learned a lot, and truly found an interest I did not know I had in oceanography in the Beginning.
- I really like the iPad format. As stated, I usually take these classes in the early spring when I would be otherwise unable to take regular classes.
- That all the needed information like the reading, lectures, and tests are all in one place.
- The lectures were good even though it was online.
- The IPad made it easy to go at my own pace.
- I could do it on my own time on a very easy to use, cool, iPad! ;)
- Personally, I just love the subject matter of these courses.
- Self-paced and very organized

- It was interesting learning that most of our products go to a foreign country either to be processed or sold at the market. Most of all, learning that it's processed in foreign countries and then brought back to the U.S. It seems to be an easy way to lose money. It was also very interesting learning about the lamprey. I did not realize they had a fishery let alone the fact that they are cooked as cuisine.
- I liked the format and the material covered was very interesting to me.
- I liked the shortness of the video lectures and how they did not try to be lengthy about the topics, the writing assignments were interesting because of their prompts, and the creative assignments were fun to create with all the apps available on the iPad.
- Self-paced delivery.
- own time convenience
- I enjoyed the first and second module and the visuals/comparisons made to enhance learning. I learned invaluable things about the ocean movement and wind patterns.
- How easy it was to follow and the fun pictures made it more interesting for me when I got little bored.
- The way the material was presented and reviewed within lectures with questions
- Same as 4
- It was super straight forward and easy to understand. Also the IPad is such a bonus because you can take it to other classes and take notes off of it through google docs.
- I thought the courses were great. Even though the lectures are just the instructors speaking, I can clearly feel their passion for all subjects discussed. I really enjoyed the courses and feel I have gained invaluable knowledge that I can use towards my future.
- That I could go at my own pace.
- How portable they are and the instructors' sense of humor.
- The wide breadth of topics was interesting to me as someone new to the subject matter. I also like the combination of the lecture along with slides to explain the material.
- The knowledge base of the presenters. The diversity of the content of each of the lectures and details and history of each of the fisheries and how the regulations are applied and have evolved.
- Freedom of homework
- The videos were so helpful and tied in well with the readings. Very informative and fun.
- N/A
- Jim Seeland's narrations are gold! He is knowledgeable, down to earth, and easy to follow!
- I liked learning about the various operations around the state and how they conduct business
- Liked how flexible class was
- I liked being able to pace myself. Setup was great for people who work full time, have lives outside of school.

- My favorite thing from the fish biology class was learning all the kingdoms and family trees from the different phylum's, I found that very interesting. As far as my Oceanography class I'd like to say my favorite part was the writing assignments and creative projects. It really gave a significant amount more of reinforcement of the subject matter and initiated a real spark to want to understand what I was reading and writing, it seemed rather important to really grasp these crucial subjects.
- I like learning about Alaska fisheries because I already know the easy stuff so it makes some of the challenging stuff more approachable.
- The assignments were easy and engaging.
- The material was presented in an easy to understand format. I like the lectures.
- The dynamic of how it's set up.
- I liked that there was narrative lectures and a lot of personal experiences to tie the concepts together.
- I liked the easiness of materials being provided and the book being easily accessible.
- In depth look and detail for each session
- The no internet needed
- I loved learning everything that it taught and getting all this new information that is actually applied and relevant to the real world.
- It can be done at my own pace, I take these classes along with on campus classes. It helps to work at my own pace.
- That it was on the iPad. It made it easier for people who could not live in Sitka.
- I loved that I could do the course material and tests on my own time. I also really enjoyed how the layout was, as it made it easier to take notes.
- I really enjoyed the topics, very interesting stuff.
- Being able to do the lectures at my own pace was one of the things I liked best about this course. Another thing would be that the course was formatted in a way that was easy to navigate.
- I really enjoyed the flexibility of the course. The fact I was able to work on assignments offline in a breeze was wonderful. I especially enjoyed the fact we used google docs because if my iPad died I could continue to work on my projects.
- How portable it is, and how it can be done offline
- My favorite part was that it was a move at your own pace course, and that the classes supplied other material to look at, including the books and the creative projects. These made the class very enjoyable but not a pain to have to listen through.
- As per all the courses, I really enjoy the content of the classes. All the courses contain awesome content that are fun and interesting to learn about.
- I liked how you could see how much of the course you had completed.
- N/A
- I liked how the course was revolved around studies in the field.
- Learning about the wildlife in the ocean.
- The different Professors teaching within their specialty.
- I enjoyed the fish aspect of the oceanography class and the salmon courses of the fisheries class.
- I liked learning about the different fisheries that vie never hear about. I also liked that it's independent and self-paced.
- Although I liked all of the content in the course, I'd have to say I enjoyed learning about marine ecology the most. It was very fascinating.
- Is the whole thing an option? Honestly, I enjoyed this course much it's hard to pick just one thing that I liked best. I find oceanography to be such an interesting study, and I always enjoying learning about it. I really enjoyed being able to take a more in depth coarse about a more in depth science than just a regular high school science class. I really enjoyed the section on nekton, on cetaceans especially, as I would love to study them when I grow up. I also really enjoyed how the course was broken down into the different sections, and how those sections were broken down in to bite sized chunks with plenty of explanation about everything. It really helped me to feel sure that I understood the material and to not feel so overwhelmed with too much information.
- I loved the creative projects. Not many online courses offer the opportunity to self-express.
- I loved the IPad, and Mr. Markis was awesome and very helpful!

- It's super easy and convenient to go through the lectures and revisit them whenever needed. As a lecturer, I enjoyed how Reid taught. His sharing of personal stories and interests definitely helped the information stick and helped me get excited about the material.
- I liked being able to work on it from home and whenever I see it necessary, and everything being able to be completed on the given iPad.
- I like about this course is learning about salmon and life cycle of salmon but learning what hatchery do to these salmon.
- The video lecture information correlated very well with the exams and writing assignments. Also I really like how it was self-paced so it gave me time to do the assignments when I had time. It worked very well with my other high school and college classes.
- I liked the reading and writing assignments the most in this class.
- The information of course! And the fact that I was able to complete the courses in a remote area while balancing my workload, oh, and travel for projects taking school along. The convenience is a huge plus for me; there's no way I could participate in the program otherwise!
- I appreciated the guest lecturers, specifically the gal from YKK region; she was great. I forgot to mention in the previous slide that some of the others could use some more structure and perhaps...polishing, but I think it's great to draw in outside experiences and perspectives.
- The iPad program is very user friendly and convenient. I know the program is in its initial stages, but with some refinement, it could become more than a great tool, an outstanding one. And again, I know it's a huge undertaking, but it's off to a great start!
- The readings and creative activities
- I liked the details given and why it was important. Also the images and diagrams really helped.
- I enjoyed the ability to go through the lectures at my own pace.
- I really liked how the lectures are all vocal, that really helps me learn the terms and understand how to pronounce things easier.
- I liked some of the topics that were covered, and I think Oceanography is an interesting thing to study. I also liked the creative projects. Even though I thought they were challenging and I ended up spending a long time on them, they were pretty fun, too. One last thing I liked was that this course is self-paced. Even though I was behind at some points, I was able to learn at my own pace and complete the course.
- I like the wide variety of fisheries that the class covered, and that it was across the entire state.
- The straightforward way the courses were presented.
- I can't make up my mind it was so hard trying to choose what I loved most.
- The parts about history and the parts talking about the different species.
- You can do it at your own pace and the video lectures.
- That it covers many areas and fisheries.
- What I loved about the course was everything about it. First the platform it comes on is genius and very accessible as I can bring it along with me anywhere and this makes potential time useful. I loved all the courses and a few of them were kind of difficult as I wasn't familiar with the species like the Lamprey and Herring, but with the other lessons I could relate to because I see the species and got to experience the fisheries. I also loved how all the lessons went in order from the introduction of the species to the fisheries and management goals. I also like all the photos and I think Dr. Reid's lesson about his research on monitoring octopus species was cool of how he used a gore to document octopus making its way to the bottom.
- I liked how the videos where easy it fallow and that the tests was easy to take. Except for the password part
- I liked that this course was easy to understand and made my learning more fun because I wanted to do this class it's not one of those classes were I have to stress about because I don't enjoy it. So I liked everything about this course. I would do it again if I could.
- Learning many different things and being able to connect them with my other classes.
- I enjoyed that I could learn at my own pace. During outmigration it is challenging to find time every night, so being able to navigate the course at my speed was great.
- It was an opportunity to learn more about what's around me and the job I had for two years
- The course material in and of itself was extremely fascinating and having the opportunity to do it while out of state was so wonderful!

6. What are some areas of improvement?

- More videos, motion in graphs and diagrams. Interviews with real fishers, divers, processors, How about some game-like simulations of fisheries management?
- Hmm... Works pretty well for me.
- You guys are killing me.
- Supplying the tablet in a timely manner was a bit of an issue in my circumstance in general. It would be nice if they were sent out prior to the start of the semester to ensure if there were any mishaps or problems with shipping that there would be ample time to remedy the problem.
- I can't think of any.
- I thought everything was good
- Na
- I think it is fine for the most part, but had a difficult time hearing some of the lectures done via phone.
- Make the Freshwater Ecology class available on iPad, all of the other courses are.
- Having an app you are allowed to use to access pictures or screenshots that could be helpful to the test taking.
- The exams, some the question were a little confusing. Not the content but the way it is written or the way you answer.
- Longer time to send out pads
- Quality of audio
- At the end there were less notes. To me the notes were helpful to see the main points while he talked and expanded more on each idea. There should be notes in the last module and the second to last one as well.
- Videos needed a tiny bit of improvement.
- I would love to see some interactive parts to the exams. I.e. drag and drop from a choice of pictures, etc.
- In the Norton sound presentation you could not hear the lecture due to poor phone connection
- None!
- N/A
- N/A
- N/A
- Some glitches in the questions at the end of lectures and miss-spellings on test questions
- Please make it clear what you are asking in questions. It is hiccups like this that makes it devotional to do school work because there have been times I knew the answer but due to how the sentence structure was I picked the wrong answer. The main reason I went into this field is because it is straight forward and fun it doesn't beat around the bush.
- My tablet wasn't uploaded with any of the videos or pdf documents that were supposed to be on it for each of the individual mods. I was eventually able to get the information that was needed from my professor but if I was outside of cell range I wouldn't have been able to do that. No other complaints or suggestions. The content was amazing and very informative.
- Time - there was a lot of modules to go through with the assignments and projects and a short amount of time to get it all done.
- More videos. Being shown inside hatcheries and work as a fish culturist would be useful.
- N/A
- See previous response.
- Everything was perfect
- Don't leave the downloading of exams to the students.
- No IPad. More interpersonal responses. Not have a 77 question test that is full of questions it took 3 weeks to watch all the lectures on. Do posttest after every module. That way information is not lost as we move to the next weeks of lecture.
- General proofreading of the lessons and tests for typos would be nice.
- There were a lot of typos in the test, and the links in the readings never worked.
- A variety in writing assignments.
- N/A

- There was some text in the tests that needs to be corrected. Some questions and/or answers were confusing because of the misspelling or out of order words. Also, Module 13 was showing as Module 12's topic in the modules. Some of the homework questions were not correct, so it in turn affected our test scores, I believe. Just make sure everything is edited and looks normal from the student'; point of view.
- Since these recordings appear to be older maybe remaking them with new and relevant data that is occurring now.
- None. I found almost everything easy to figure out, and the professor was quick to reply to emails the few times I did have troubles navigating the iPad
- I had a hard time hearing Lecture 14. It was very quiet and muffled so I struggled to understand certain slides.
- N/A
- There were several typos throughout some of the exams and lecture slides. Other than that, I enjoyed the course and might take another similar one in the future.
- I like the newer & short lecture segments rather than death by PowerPoint.
- Re word some questions. a bit confusing
- In certain modules, there were High-pitched noises or the audio was choppy and difficult to understand. The screen often would be off to the side so that part of the screen could not be seen, therefore some of the text and diagrams.
- Maybe more Practice questions at the end of each Lecture
- Sometimes the remote speakers on fisheries of Alaska lectures where a little quiet or hard to understand with the connection they had during the recording
- Same as 4
- Some times in the lecture videos something would happen where the teacher would click something on his computer and shift the video somehow to where some of the words would be blocked to where I couldn't see them.
- Honestly, I cannot think of any. The whole process was painless. My biggest issue was just trying to find the time in my busy schedule to watch the lectures and find an hour or so of undisturbed time in the evening to take the exams.
- Study guides for each test would have been nice. Otherwise, this course was great.
- N/A
- Occasionally there were times in the online modules when the slide would zoom in and the lower portion of the slide would not be visible. Overall this was not a big deal.
- When a lecture is paused it would be good to have a mark to make sure no sections are skipped. The minutes of each section should always be listed. A couple of the lectures didn't have.
- To have 3 separate deadlines for the 3 sections
- This class was fantastic. I learned a great deal about hatcheries and hope to take the second class as well.
- N/A
- This was a solid program: user friendly, efficient, and effective. One thing I could have found helpful would be class & timeline; on the iPad itself or programmed reminders the pop-up. For those of us with full-time jobs and families any help we can get are appreciates.
- This course was fun and informational. I'm not aware of any Ares of improvement at this time
- Class was exceptionally easy to navigate. Amount of flexibility and independence allowed me to continue to work and attend class with no disruptions to either. Access for hard of hearing/ deaf students. At times I had difficulty hearing the lectures, but subtitle options were not present for ANY lectures
- It would have been nice if after each test, they checked off as green and completed. I could never tell if my test was actually submitted and would have to re download multiple times which I thought it would not allow.
- I honestly really liked both classes! Fish biology and Oceanography both were challenging courses that kept me on my toe. If I had to pick something that could be improved it might be making the exams in the OCN 101 class a bit shorter. The exams for me seemed rather difficult which made me very grateful for the additional writing assignments and projects that were required for the course, it really drove home the key topics from each lecture, imp afraid without the extra assignments and just relying on studying I may not have fared well with the exams. I felt like the extra lengthy exams on top of the extra assignments seemed

like a good deal more work and time than the other fisheries classes. I think a fine mix between both class styles would be the perfect balance.

- Some of the lectures where a little dated.
- Some of the quiz questions had wrong answers, so it would be good to review those and double check to make sure they are correct. Additionally, some of the exam questions were written poorly and did not make much sense. For example, one question was & True or false all sea snakes are poisonous; Sea snakes are venomous, not poisonous. The correct answer should be false, but in the exam it was true and not; this could be a cause of confusion.
- The end of lesson 14 the review didn't match the lesson.
- Better detailed of live uses of equipment. I would like to see these classes be recorded in a real class room setting. So you feel like you're in a real class room setting. On the plus side, you can hear other students asking questions that you might have but unable to ask.
- I thought that this course was really well thought out and put together, I do not have any improvements for this course.
- Maybe section due dates. I know this class is pretty do it yourself but have three due dates throughout the semester. Like modules 1-4 due 2/28. Models 6-10 due 3/31 or whatever. This might be helpful to students that benefit from due dates and not everything due at once. It is also beneficial since pads have an earlier due date back then most traditional online classes.
- Communication
- Nothing this class was fun
- This class overall is wonderful, I would work on the update of the classes themselves, I notices some of them were out dated information.
- The length of the presentations in FT 122 were not all about the same length, as a result I may have started and stopped mid module.
- Make the lectures not as long.
- The material in the modules could be updated to a more recent date. Most of the information seems to be from 2014, it is currently 2019.
- No recommendations here, really enjoyed the class and thought it was ran smoothly.
- I can't think of anything that could be different that would've helped me during the time off these courses.
- For me, one area that could be improved is the apps used for the creative projects (mainly the Draw it app), I had issues completing my second creative project and it took much longer than I anticipated. Other than that, I had a fairly easy time completing the course and it went well.
- The iBook's course (oceanography) had issues with the video being low res, causing slides to be unreadable.
- There were a few areas in the lessons where the small quizzes were incorrect, or where the end of module recap speech was not matching the module it was on, so it might be beneficial to go through and double check all the quizzes and end of module speeches to make sure everything is correct. Besides that, I have no other complaints!
- On quizzes and tests, I find it to be infuriating when a good portion consists of got you questions. The exams are the time to reflect on the content of the course instead of worry about lite benign, unimportant, and ultimately useless questions.
- More recommended due dates for less opportunity to fall behind.
- N/A
- I didn't have any critiques for the course.
- It would be nice to have more feedback on assignments to know if you're on track...
- I think the data should be updated to reflect the most current rather than 2014 information. Additionally the clamming regulation information is not accurate as the east side is currently closed and there is not a bag limit as of today on the west side of the inlet.
- I would like for the fisheries to have a little more work or assignments to balance out the tests. The oceanography class should have discussions with the Teachers before each test as well.
- A minor improvement could be to have more videos about the fishery and how certain fish are caught or more entertaining media in certain lessons that didn't have any. I really liked the octopus video, though.

- If you mean for the course, I don't really have any suggestions. I found the lectures very enticing, and the assignments for the most part, well. Some of the readings I thought were a bit hard to follow, but that was really it.
- I can't really think of anything right off the top of my head (happens every time I'm asked this question). I guess if I had to pick one thing...I really can't think of anything. The only thing that I can possibly think of is more time. I misread the date that the iPads were due back and thought we had an extra week, so when I found out that wasn't the case, I had to work extra to finish up the last part of the course. But that's really my own fault so I don't know if that really counts. Maybe a review unit before the exam would be nice. I took notes, which helped me study for the exams, but not everybody does, so it might be nice to have a review to go over before taking the exam.
- I can't think of any. I really enjoyed this course and I think it was taught really well.
- I really needed to be able to see my grades cumulatively like with normal UA classes. I know individual grades of assignments, but I don't know how they are weighted, so I am very worried coming to the end of this semester.
- Overall I enjoyed the class. It would be helpful if the intro lectures reflected the change in exam software. Also, I found it sometimes challenging to engage with the material in a meaningful way beyond memorization. I would appreciate some assignment or more involved questions to work on beyond the multiple choice test. There was a lay of good info but sometimes it was challenging to see the broader picture of how that info connects and overlays.
- A good improvement would be help with time, such as set deadlines per unit or a given schedule to follow throughout the semester.
- Some of the improvement for this class have better recordings and I think having taken a lots of nots. I also think that I need to study a lot for these exam and take my time at doing them.
- Managing time to finish the class on time and using a voice over on creative assignments.
- Some areas of Improvement are that, I now know a lot more about oceanography then I did when I first started this class.
- Editing the lecture content, module and checking quiz questions and exam questions, which I know is a huge project! It was difficult at times to have to revisit an earlier lecture moment to double check that you had indeed heard correctly when misinformation was given later in the lecture. Also, it'll be easier on instructors to not have to listen to me argue that an exam question was poorly or improperly worded :-)
- Is there a way to improve the sound in some of the lectures, particularly distance guest speakers? At minimum, subtitling those that are less than adequate would be helpful.
- I enjoyed having the ability to tap the 10 second rewind if I needed to hear something again, as opposed to trying to high-speed scrub with a fat finger. I think the plan is to transition all of the lectures to that format perhaps?
- Formatting of the class on the iPad is difficult to get used to
- Watch the exams on the iPad. There were a few errors that could only be seen on the iPad
- Some of the stats could be updated in various lectures.
- I think some video explanations where a fish is being showed doing a certain action like surface feeding or a type of swimming their body allows, would be more memorable, instead of just imaging the actions.
- I thought this class was very informative and I learned a lot. The biggest difficulty for me was making myself focus on all of the videos, since there was so many. But that's just how it is with online courses, and I don't think there is anything that needs to be changed about it.
- I think this class was amazing. It was a great first college class experience and a good way to get my feet wet with the academic level of college classes. I do not have large curricular improvements, but more small technical fixes. First, the iPad's are getting older and don't hold a charge for more than a day or two. Secondly, the iPad I received didn't have the readings downloaded, however, the staff quickly put the readings on blackboard so I could access them. Other than those two small inconveniences, the class was truly amazing, and I am looking forward to taking more classes like it in the future.
- N/A
- Put more Live Action videos in so people can see what we are learning through the lectures.
- Honestly I would've liked more visual points i.e. more points on the screen.
- The drawing apps could be improved and more questions in the mini tests on the video lectures

- Reduce rhea amount of dry reading. Improve the sound during the some lectures that were hard to hear. Some terms felt confusing and were hard to remember.
- Some of the audio in a few of the lessons, but with ear buds it was good.
- I feel like it would be a lot easier for students if they didn't have to call and get the text passwords. Also maybe if it wasn't so confusing fir the upload and download part.
- Some areas of improvement for me where I learned more about the fishing industries in the state of Alaska. I only fish for salmon in Bristol Bay so that's the fishery that I thought I knew everything about. But after this class I know more about the salmon fishery and the many other fisheries that I had no idea about. So my area of improvement was I learned more about the salmon fishery and learned about the other fisheries in Alaska.
- For me personally it is hard to take notes without words, so on slides that have just talking, more words could be added.
- Some of the questions were worded very oddly. Also, on one of the quiz questions I selected the correct answer, but the iPad said it was incorrect and the correct answer was the one I chose.
- It is a bit disorganized as far as progression and the management pieces I feel should be broken up a bit more as there long and technical as opposed to the biology portions
- None

7. Could you have taken live classes (ie. meet once a week, require strong internet)? Why or Why not?

- Yes, but every week would be hard,
- Possibly. My job is strenuous and my energy levels in the evening are low.
- Maybe, but I usually work full time. It would depend on the times.
- No, the semester started late summer fall. I work as a project technician which requires a lot of remote field work during that specific time due to my work with salmon. With that said there was a lot of times I laid in my tent or cabin completing lectures and readings and that would not have been possible with a live class.
- No. A strong internet connection is an issue for me.
- No, intense work schedule prevents me from pursuing and maintaining a live-class schedule.
- Na
- Work schedule did not permit
- I am not usually able to take live class due to my work schedule, Active Duty US Coast Guard
- I would once a week just to have someone monitoring my progress so I don't fall behind.
- Potentially I could have. But it would be difficult to fit into my schedule
- Possible. Depends on the time of day.
- Arizona does not observe daylight savings, and I'm not willing to take a live class and worry about time changes
- I could have, but it would have made it very difficult with traveling and my job.
- No I work during the summer and would not have had time.
- Yes, but working full-time, I loved being able to work at my own pace.
- Living in Nome our internet connection is slow and data is very costly
- Possibly - depending on the times because I work full time
- Possibly. Working outside full time makes for a lazy evening...
- Due to my summer schedule with work and not having strong internet live classes wouldn't be best for me
- I could if they were evening classes only or I dedicated full time to school and not work which I might but it's not an option for most and the only reason I could is the post 9/11 GI Bill®. A live class would be good for me if it counted as an attended class for the requirements on the GI Bill®. So I could attend a live class depending on the circumstances.
- No, working full time in the field

- No I was at camp throwing fish over a weir when I started classes and live in a Dry cabin once I got back to town so it was hard for me to get internet until I got truck fix and transportation was easy to get to the liberal but the internet was always bogged down.
- No I could not have. I have been working in a remote field camp studying the out Migration of salmon Smolt to the ocean and the in migration of adult salmon for all three months of this summer semester. The fact I am able to do my school work in the field is a big reason why I was hired for my job in the first place in my opinion.
- No, not with a full time job.
- No. Because the internet connection may not be strong enough.
- No, I work full time so it is hard for me to take live classes.
- Depends
- Not exactly, maybe if they were scheduled on my own time due to work.
- N/a
- I would have much rather had live meetings.
- I could have probably attended a live class, but I often take these classes in this format during late winter/early spring, when I am off the grid for several months intermittently.
- Sometimes, I was out of town a lot so I would have missed classes.
- Yes I could have. I would have learned more with that I think.
- No, I couldn't have, because my schedule was too crazy to be able to have a definite time to meet.
- Yes, I will take classes that have meeting times, if I have to. Not having meeting times and being able to complete my course on my own time works better for me.
- I definitely could have however, this style of learning (at your own pace style) is incredibly beneficial and not near as stressful. While I could have attended scheduled meeting times there were a lot of variables that could have hindered me from attending class.
- I have not. I'm early on in my degree program and haven't found it particularly necessary.

- Yes I could have. I enjoy having a teacher in the classroom or over the internet because it's more hands on. I also find it easier to focus depending on the teacher's style of presenting. But I also find it very helpful to have online classes. It is easy for me to pace myself and continue at my own leisure. It also allows me to finish my classes early so I can focus on my other courses.
- Yes I could have but during the busy summer months this format was much nicer!
- I could have taken live classes although I appreciated the freedom to work at my own pace and not worry about missing lectures or meetings with the instructor. In the future, I might consider taking a class in that format.
- Probably not. With my Army schedule and other requirements I currently don't have a predictable schedule.
- this would be tough as I live remote and internet is not the best
- Yes, it would have possibly incited more interest in the course, connecting to peers and professors. There are live chat rooms that allow this (not sure if it is iPad compatible).
- Probably could have, but would have been harder on me with no internet at my home.
- No I could not have taken live classes because I had a variable work schedule doing fieldwork and managing crews and I not have internet or the option to get it where I have been living since June
- Answered in other survey
- Yes, that would not have been a problem for me. It probably would have kept me more on track through the semester.
- I live in remote Alaska. My internet connection is not reliable. My communication, in general, is not reliable due to my location. I could not have taken a class that required a live connection to lectures. I also could not have participated in a class that meets once a week. I really only leave the island once every three months or so. My work requires me to be on site for extended periods of time.
- At the beginning of term, no I could not have. At that time I did not have good internet. Today, yes, I could take a live class.
- Yes, but living in a small town in the middle of nowhere in Oregon, the internet can be unreliable. It can suddenly go slow when folks in town get off work or if the weather is bad. These things take out the whole town's internet so I wouldn't be able to go elsewhere.

- This semester it would not have been feasible to take this course with a weekly class requirement. My work schedule is variable each week so I would have had to miss class occasionally. However, if there was flexibility to make-up missed class then I could do it.
- Yes, though I don't feel that I would have grasped and been able to focus on the information as well if it was drawn out over a long or multiple semesters. I took leave time from work to do the classes. It would have been much more challenging to fit into my busy schedule with work and family responsibilities
- I don't like live classes
- No, I work FT and also have a family. Committing to class times is extremely difficult for me.
- N/A
- No, weak internet and working two jobs so time constraints would have been an issue.
- No, same again as all the other surveys I have taken.
- No. I worked full time and had other classes on campus- both would have conflicted with class meetings
- I could have but I may not have been able to attend each meeting.
- No I would not have been able too. At least not without detailed planning and coordination. Not only do I have two kids a wife and countless kid's sports and activities to attend but I also work full time which requires me to travel to remote work sites in the Alaska bush for weeks at a time. It would be extremely hard to meet weekly other than during the winter months.
- Yes I could have
- Yes. I live in Juneau where there is plenty of internet access.
- I could not have taken live classes, unless it was evening. I work full time during the week and have a full course load so being able to flex when I can study and do homework is a must.
- Classes in person will always be better than a screen.
- No because of my busy schedule.
- Yes because I'm an Accounting major and this class is very confusing to me. Live classes, with an evening meeting time, would have been more Beneficial for me to better understand the material.
- Yes. Strong internet
- Yes it might have helped better to stay on track
- Yes I could have but this alternative was a lot better for my schedule and for actually being able to enjoy the classes and Working for Fish and game.
- It is possible, but part of the reason for taking this class is time management for myself.
- No because I live where the internet sucks
- Not really. My schedule is very full with my children's extracurricular activities and I would have found it difficult to meet in an afternoon or evening timeframe.
- Personally I could not have with my work schedule.
- No, I traveled for hockey quite often so a live class would have been very difficult to schedule for.
- Well, since I am a remote student I could not have attended on campus, but I am open to doing online meetings because I have done Online meetings before.
- Yeah, but my town's internet is unreliable so this was the better option
- I do not know if I could have met all of the live classes if I committed to them just because I have such a busy schedule, but I am sure that if it was a part of the class, as long as they were not long, they would most likely be beneficial.
- Yes but I would prefer not to. The whole thing about the iPad is the ability to do it at your own pace.
- No, more than likely not due to my very booked up Schedule.
- N/A
- I couldn't because I live on the Kenai Peninsula.
- Yes, but it is much more convent to do classes online.
- Yes- I personally like walking into a classroom but the iPad was great! Would be nice if they expanded fee course to Homer since it relates to a lot of the fishery
- I could but it would have to be through the computer.
- No, because imp busy a lot with other things.
- Not a big fan of online classes, but I wouldn't have minded a live class. I took a writing class at UAS last semester, and really enjoyed the in-class experience.
- I could most likely have taken a live class, but it would have depended on what time and what day. I teach figure skating at 4 on Mondays and Wednesdays and I have skating at 4 on Fridays, so the class would have

to be over before then. The internet can act up sometimes though, and like I said before, I was out of town for some skating competitions for 5-6 days at a time during the semester, so depending on what day the class was on, I could have missed it them. It would have all depended on what days and what time the class fell on, and how many classes I would have been able to miss.

- I really hate live classes, but I would have if it was required. I don't like live classes, a big reason I take online classes is because live classroom settings are not where I thrive as a learner.
- Yes, I most likely could have, but that would have made things difficult with travel plans, etc.
- That would have been really challenging for me. I don't have reliable internet at home and work close to fulltime so this was a great option for me.
- Yes, depending on the time, it might've helping keep my timing on track.
- Maybe dependent on how do feel about taking live class.
- Yes, I have access to internet and I think it would help keep people moving along in the class.
- No I would not have been able to take a live class because right now I'm still in high school and there is nobody in my family that would be able to take me to the live classes.
- Big. Fat. Negative. My winter location, though in a Borough, is notorious for blackouts, brownouts, total loss of internet, and many other challenges. My summer location, although more remote, has a better internet connection so I may actually attempt to take a web course so I can get a prerequisite out of the way. Also, if I were in my winter location this summer, the internet situation becomes even more unreliable, and my 'negative' would be far bigger and fatter.
- No, I am located in Juneau. I could have met online though
- I could have, but with my scuba diving schedule probably not with this course.
- Yes, I only had dive semester classes to worry about. I had plenty of free time.
- Not with my schedule or place I live, it has always been difficult to have reliable internet in Seldovia.
- I think it wouldn't have worked out very well for me to take live classes, one reason being the internet. I also think that it might have been harder with my schedule.
- If necessary I could've attended a live (Online) class, but it would have been inconvenient if it wasn't when I had a free period. It would also be hard because I miss various school days for sports and don't have access to internet on those trips. Furthermore, our class schedule at school is on a block format, so the classes occur at different times every day.
- No, I wasn't aware that was a choice.
- No my schedule was way too full.
- I probably would if I had the time.
- No. I'm not in Sitka I live in Juneau
- My schedule would be hard to coordinate with a live class. And it would be harder to go at my own pace.
- No, I couldn't take live classes because I am currently a high school student. I also can't do live classes as I don't have really good internet as I live in the hills 20-25 minutes outside of Elgin, Oregon.
- Yes but no because I have been moving around a lot this year and have not been able to get internet the whole time
- I think I might have been able to but the internet at my school isn't always the best so I think there would be some days were I wouldn't be able to get connected for live classes. But it is always better to learn hands on and with a person.
- I could because my schedule is free.
- Nope, I live on a remote island and our internet is dependent on weather
- I could have but I didn't really have the time, and I like to learn in pulses
- I could have but realize many people can't and can still take this course, it's great. I would love to do live classes in the future.

Appendix E. 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%)

Example writing assignment and associated grading rubric

Student Name
9 September 2019

Based on your reading assignment, define what liquefaction is and why earthquakes have such a big impact in Utah?

Liquefaction is a process that can result from earthquake ground shaking in locations where sandy soils are saturated with water. The soil begins to behave like a liquid or quicksand which causes damage to buildings and infrastructure (All About Earthquakes, p. 4). Liquefaction has posed a threat to communities in northern, central and southeastern Utah built near lakes, rivers and streams such as Cache, Davis, Salt Lake, Tooele and Weber counties. These counties are most susceptible to seismic activity in Utah which means that medium to high impact earthquakes are likely to occur. In addition, communities within these counties are built on soils which have ground-water close to the surface. Earthquakes in Utah have a severe impact due to the likelihood that liquefaction will occur. Damage such as ground cracking, buildings sinking and tilting, buried tanks containing hazardous material, and lateral spreading of the land can devastate communities and endanger lives (All About Earthquakes, p. 4).

_____

9/10
Length - 1, Synthesis - 4, Original - 4

Hi XXXXXX,
Nice! Concise and to the point. You absolutely identified Liquefaction correctly and referenced the reason this phenomena is so frequent in parts of Utah. It is interesting thinking about Utah in comparison to Anchorage after the recent earthquake up there. Anchorage has a variety of unsettling facts about it's volcanic and geotechnical underbelly, but if 1964 didn't sink the city it would take a pretty big earthquake I Think. I have included the rubric below for review. If you have any questions please don't hesitate to reach out,
-Joel

Writing Assignments
For each lesson, students will have a reading and writing assignment. The writing assignment will connect the content of the lecture with a current affair in a reading assignment. Students will be given the question that they are to address in their writing assignment prior to their reading assignment. To complete each writing assignment students will create a Google Docs document for each writing assignment and upload writing assignments to their instructor via Google Drive. Students without internet can make other arrangements with their instructor.

Writing Assignments	Not great	Good	Excellent

Length and Breadth (out of 2 points)	Short and/or copied text (0)	Two paragraphs with some insights (1)	Two paragraphs with well-conceived information (2)
Synthesis (out of 4 points)	No ties between reading and lecture (2)	One or two connections between reading and lecture (3)	Multiple connections between reading and lecture (4)
Original thought (out of 4 points)	Nothing original offered (2)	Some original thought (3)	Unique and interesting synthesis showing understanding (4)

Example Creative assignment

Creative Project Example.pdf (Attached)