

**University of Alaska Anchorage
School of Education
3211 Providence Drive
Anchorage, Alaska 99508-8269**

**ED 580 Professional Learning in Science Education:
Kenai Fjords Floating Teacher Workshop**

3 Credits, Graded A-F

Summer 2024

Course Sponsor: Alaska Geographic, Ocean Alaska Science and Learning Center (OASLC), Kenai Fjords National Park, Dreamcatcher Charters

Instructor: Fiona North

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Primary Grading Instructor: Madeleine Morimoto

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Course Meeting Location: Kenai Fjords National Park, Seward, Alaska
Sugpiaq Traditional Homelands

Start and End Date: June 3 – August 9, 2024

Class Day(s) & Time(s): June 3 8:30am - 4:00pm in Seward
June 4 8:30am - 4:00pm in Seward
June 5 8:00am - June 10 4:00pm on Boat

Final Project Due: Outline July 19; Final August 9, 2024

Course Description: The Kenai Fjords Floating Teacher Workshop aims to help teachers inspire future generations of environmental stewards by bringing ocean issues and scientific research into the classroom through place-based, audience-centered, culturally relevant learning. Topics will include environmental education theory, research methods for long-term monitoring of species, fjord ecosystem ecology, glaciology, indigenous ways of life and local effects of global climate change. Direct interaction with researchers and long-term monitoring projects will guide discussions, with emphasis on stewardship and resource management. Participants will practice field research, kayaking, bear safety and other outdoor skills. Teachers will consider how to integrate their learning from this fieldwork course into their teaching and educational environments.

Intended Audience: Teachers and non-formal educators

Enrollment Restrictions/Course Prerequisites: None

Course Design:

- a. Requires 45 contact hours and approximately 90 hours of engaged learning.
- b. Does not apply to any UAA certificate or degree program.
- c. No UAA lab and/or materials fees beyond standard charges.
- d. This Alaska Geographic course will be field-based, with two days in Seward, Alaska, and the other days aboard a boat in a remote fjord ecosystem without cellular service. There will be inReach radios and SAT phones for course relevant communication and emergencies. Learning will be achieved through place-based collaboration consisting of group dialogue, lectures, field observations, and audience-centered activities.

Instructional Goals and Defined Outcomes:

RESEARCH BASED THEORY/PRINCIPLES/PRACTICES/TRENDS (CONTENT)

1.0 Instructional Goal:

- 1.1 Use experiential learning to help teachers incorporate nature and science-based education into their classrooms. Teachers will create new lesson plans that reflect course objectives.

Defined Outcomes:

- 1.1a Participants will understand the basic natural history of a fjord estuary ecosystem, with a focus on glaciers and nearshore marine environments.
- 1.1b Participants will learn about Sugpiaq ways of life and consider the importance of indigenous knowledge in culturally responsive teaching.
- 1.1c Participants will consider the need for baseline knowledge and long-term monitoring of ecosystems to effectively manage and understand change.
- 1.1d Participants will understand the ecological relationships in the nearshore ecosystem, with an emphasis on “indicator” and “keystone” species.
- 1.1e Participants will understand current methods of data gathering and analysis for conducting long-term ecological monitoring.
- 1.1f Participants will explore ways to utilize place-based education to bring the natural world and public lands into their classroom. They will find ways to incorporate ecological issues such as ocean acidification, wildlife monitoring, and climate change into their teaching in an inspiring, hopeful, and culturally relevant way.

THEORY INTO PRACTICE (APPLICATION)

2.0 Instructional Goal:

- 2.1 Provide a collaborative structure for participants to translate scientific knowledge into audience-centered, hands-on classroom activities and lessons.
- 2.2 Engage participants in dialogue on best practices for environmental learning and merging non-formal natural environments with formal classroom teaching.
- 2.3 Inspire teachers to plant the seeds of natural ecosystem stewardship with their students.

Defined Outcomes:

- 2.1a Participants will analyze and discuss a variety of nature and science-based education materials, activities, and teaching techniques for their own application.

- 2.2a Participants will plan ways to engage their students with local non-formal education sites.
- 2.3a Participants will discuss past, current and potential future impacts to the nearshore ecosystem, methods of mitigating these impacts, and methods of making these impacts and issues relevant to their students.

REFLECTION ON THEORY INTO PRACTICE (REFLECTION)

3.0 Instructional Goal:

Engage participants in discussions, reflective journaling, and informal sharing about science instruction and how to incorporate gained knowledge and experience into their classrooms.

Defined Outcome:

Participants will review and reflect upon the scientific information covered. Participants will complete a journal, reflecting on how they can create similar learning experiences for their students.

RELATIONSHIP TO STANDARDS (STANDARDS)

4.0 Instructional Goal:

Familiarize participants with science content standards addressed by the strategies and concepts presented.

Defined Outcome:

Participants will identify the science-content standards applicable to their classroom.

Course Assessment and Grading System:

Course grading will be A-F based upon the following. Models and rubrics will be provided for each assignment.

- a. Participation 25%
Participants are expected to actively participate in discussions, activities, and other experiences during the seminars and group sessions.
- b. Reflective Journal 30%
Participants will complete a thoughtful reflection in journal format of the course experiences, discussions, applications, and readings.
- c. Final Project 45%
Participants will develop two classroom lesson plans *or* one classroom lesson plan and one digital/visual presentation (i.e., iMovie, book) applying concepts and theory discussed during the course. Lessons will include audience centered activities and a plan for assessing outcomes of lessons to measure success. Participants will turn in an outline before their final project is due and be responsible for providing constructive feedback on two other students outlines.

Quality of Work

Participation, assignments, presentations, etc. will be graded for quality as follows:

"A" work goes beyond the assignment in originality or includes critical thinking extensions. 90-100 points earned.

"B" work is complete, comprehensive, and well prepared. 80-89 points earned.

"C" completed as requested, on time, and in appropriate format. 70-79 points earned.

“D” work is incomplete or shows limited effort and understanding. 60-69 points earned.

“F” indicates that the student has not met the guidelines for “A-D” work. Less than 60 points earned.

Writing Style Requirements:

Participants’ writing will reflect the clarity, conciseness, and creativity expected of post-baccalaureate certificated educators.

Course Schedule:

June 3 8:30 AM – 4 PM, Course Orientation and Content Introduction in Seward, Alaska. Introduce course objectives and expectations. Engage in discussion and hear presentations on a variety of topics including indigenous ways of life and audience-centered education.

June 4 8:30 AM – 4 PM, Ocean Issues and Research Orientation in Seward, Alaska. Discussion and presentation topics may include overview of nearshore monitoring research program, ocean issues, and marine invertebrates and mammals.

Note: the events of the next 5 days may shift depending upon weather, tides and other factors.

June 5 8 AM – 8 PM, Embark on M/V Dreamcatcher for Aialik Bay. Travel by boat through the fjord ecosystem with stops for geological features as well as bird and mammal viewing along the way. Potential afternoon paddle in Aialik Bay.

June 6 8 AM – 8 PM, Explore Aialik Bay
Activities might include a hike through a glacial landscape, a kayak paddle among icebergs, wildlife observations, or an intertidal exploration. Discussion on a variety of topics including place-based learning, and ocean issues will ensue as participants are immersed in the fjord ecosystem. Travel to Northwestern in the evening.

June 7 8 AM – 9 PM, Explore Northwestern Fjord
Activities might include exploration in Northwestern Fjord by foot or kayak, including opportunities for journaling and reflection. In the evening, National Park Service and US Geological Survey researchers who are conducting the nearshore monitoring surveys may join us onboard the Dreamcatcher for a talk/discussion.

June 8 6 AM – 8 PM, Northwestern Fjord Field Research
Join research crew to conduct nearshore monitoring surveys. Participants will divide into groups, helping researchers conduct surveys and gather data. Morning projects might include mussel bed surveys, rocky intertidal surveys, and clam bed sampling. The entire group will reconvene at lunch, switching roles. Afternoon projects might include sea otter foraging observations, black oystercatcher surveys, and marine mammal and bird surveys. In the evening we will travel from Northwestern Fjord to Aialik Bay.

June 9 6 AM – 8 PM, Aialik Bay Field Research
Structured much like the previous day, participants will switch locations and experience new roles with survey and data collection in Aialik Bay.

June 10 8 AM- 2 PM Aialik Bay - Wrap-up and Return to Seward
Cruise in M/V Dreamcatcher back to Seward, with potential for seabird rookery and marine mammal viewing along the way.

Final paper/project due:

Outline due July 19

Feedback to classmates due July 26

Final project due August 9, 2024

Course Texts, Readings, Handouts, and Library Reserve:Suggested Text/Material:

These readings/viewings are not mandatory before the start of the course but will give insight into what we will be focusing on. There will be shared copies of books available during the course as well as additional articles and assigned readings.

Edthena. (2021, August 23) *Zaretta Hammond: Culturally Responsive Teaching 101*. [Video]. YouTube. <https://www.youtube.com/watch?v=LxhF7TZqDyA>

Hendry, E., et al. (2022) Diversity and Disturbance: How Mussels and Sea Stars Strengthen the Rocky Intertidal Community. *Frontiers for Young Minds*. Retrieved from: <https://kids.frontiersin.org/articles/10.3389/frym.2022.715965>

Salomon, A., et al. (2011). *Imam Cimiucia: Our Changing Sea*. Alaska Sea Grant.

Thompson, J. L., & Houseal, A.K. (2020). *America's Largest Classroom: What We Learn from Our National Parks*. University of California Press.

Content References:

Booker, J., Nadeau, C., Saiyed, S., & Watkins, T. (2023). Science and Public Engagement in National Parks: Examples and Advice from Young Scientists. *The Bulletin of the Ecological Society of America*, 00(00), e02045. <https://doi.org/10.1002/bes2.2045>

Hassol, S. J. (2023). The Right Words Are Crucial to Solving Climate Change. *Scientific American*, 328(2), 64-67. [doi:10.1038/scientificamerican0223-64](https://doi.org/10.1038/scientificamerican0223-64)

Perez, L., Delorey, A., Nelson, M., Stubblebine, R., & Holly, M. (2020). Every Kid in a Park Climate Change Academies: Notes from the field. *Parks Stewardship Forum* 36(2), 226–232. <https://escholarship.org/uc/psf>

Vander Ark, T., Liebttag, E., & McClennen, N. (2020). *The Power of Place: Authentic Learning Through Place-Based Education*. ASCD.

Wright, D.S., Crooks, K.R., Hunter, D.O., Krumm, C.E., & Balgopal, M.M. (2021) Middle school science teachers' agency to implement place-based education curricula about local wildlife. *Environmental Education Research*, 27(10), 1519-1537. DOI: [10.1080/13504622.2021.1960955](https://doi.org/10.1080/13504622.2021.1960955)

Standards References:

Alaska Comprehensive Center. (2012). *Guide to Implementing the Alaska Cultural Standards for Educators*. Juneau, AK: Alaska Department of Education and Early Development. Retrieved from: <https://education.alaska.gov/standards/cultural> and <https://www.asdn.org/wp-content/uploads/Implementing-AK-cultural-standards-1.pdf>

Alaska Native Knowledge Network. (1998). *Alaska standards for culturally responsive schools*. Fairbanks, AK: University of Alaska Press. Retrieved from: <http://www.ankn.uaf.edu/publications/culturalstandards.pdf>

National Research Council, the National Science Teachers Association, the American Association for the Advancement of Science, and Achieve. (2013). *The next generation science standards*. Retrieved from <http://www.nextgenscience.org/next-generation-science-standards>.

State of Alaska Department of Education and Early Development. (2019). *Content and performance standards for Alaska students*. Juneau, AK: Author. Retrieved from: https://education.alaska.gov/akstandards/standards/Content_and_Performance_Standards_edited.pdf

State of Alaska Department of Education and Early Development. (2019). *K-12 Science Standards for Alaska*. Juneau, AK. Author. Retrieved from: <https://education.alaska.gov/akstandards/science/science-standards-for-alaska.pdf?v=1>

State of Alaska Department of Education and Early Development. (2012). *Alaska English/Language Arts and Math Standards*. Juneau, AK: Author. Retrieved from: https://education.alaska.gov/akstandards/standards/ELA_and_Math.pdf

Informed by the School of Education Vision, Mission, and Conceptual Framework:

We believe that the preparation and support of professional educators is the shared responsibility of the University of Alaska Anchorage and our partners, and that our programs must evolve dynamically in response to unique community needs, research, and continuous program assessment. This PACE course is designed to meet a professional development need in response to our partner school districts and professional organizations. The course fits within the mission of the UAA School of Education as we encourage lifelong learning to meet the challenges of a rapidly changing world.

Link to Alaska Educator Content and Performance Standards:

This professional development is rooted in the fundamentals of Alaska's standards for teachers, administrators, and beginning teachers in Alaska's Administrative Code, 4 AAC 04.200. It is offered to encourage and support practicing educators attain, maintain, or surpass the standards for effectively preparing today's students for successful lives and productive careers. (<https://education.alaska.gov/standards/other-standards>)

Learning Forward Standards for Professional Learning:

This course is further informed by the Learning Forward Standards for Professional Learning which outline the "characteristics of professional learning that leads to effective teaching practices, supportive leadership, and improved student results." As explicit in the standards, "professional learning is for educators to develop the knowledge, skills, practices and dispositions they need to help student perform at a higher levels." (<https://standards.learningforward.org>)

Course Policies:

Attendance and Make-up

Participants are expected to actively participate in all classes as a contributing member of a learning community. Attendance is mandatory, and due to the ongoing field-based nature of this course, make-up work is not possible.

Incomplete Grades

Due to the nature of this course, incomplete grades will not be an option.

ADA Policy

The provision of equal opportunities for students who experience disabilities is a campus-wide responsibility and commitment. Disabilities Support Services (DSS) is the designated UAA department responsible for coordinating academic support services for students who experience disabilities. To access support services, students must contact DSS (786-4530 or 786-4536 TTY) and provide current disability documentation that supports the requested services. Disability support services are mandated by Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act (ADA) of 1990. Additional information may be accessed at the DSS Office in RH 105 or on-line at www.uaa.alaska.edu/dss.

Academic Dishonesty Policy

Academic integrity is a basic principle that requires all students to take credit only for the ideas and efforts that are their own. Cheating, plagiarism, and other forms of academic dishonesty are defined as the submission of materials in assignments, exams, or other academic work that is based on sources prohibited by the faculty member. Academic dishonesty is defined further in the "student Code of Conduct." In addition to any adverse academic action that may result from the academically dishonest behavior, the University specifically reserves the right to address and sanction the conduct involved through student judicial review procedures and the Academic Dispute Resolution Procedure specified in the University catalog.

Professional and Ethical Behavior

University of Alaska Anchorage School of Education students are expected to abide by the State of Alaska Code of Ethics of the Education Profession and professional teaching standards as they concern students, the public, and the profession. The standards, adopted by the Professional Teaching Practices Commission, govern all members of the teaching profession. A violation of the code of ethics and professional teaching standards are grounds for revocation or suspension of teaching certification.

Technology Integration

University of Alaska Anchorage School of Education students are expected to (a) demonstrate sound understanding of technology operations and concepts; (b) plan and design effective learning environments and experiences supported by technology; (c) implement curriculum plans that include technology applications in methods and strategies to maximize student learning; (d) facilitate a variety of effective assessment and evaluation strategies; (e) use technology to enhance productivity and professional practice; and (f) understand the social, ethical, and human issues surrounding use of technology in PreK-12 schools and apply those principles in practice.

Course Safety and Risk

This course is sponsored by Alaska Geographic and the Murie Science and Learning Center. The University of Alaska Anchorage provides the credit option for interested participants. This course takes place entirely outdoors and within a remote area of Alaska. Field courses, such as this, do have inherent risks. These risks will be outlined in the Alaska Geographic Acknowledgement of Risk form and by the course instructors. Acknowledgement of Risk form will be provided at the time of registration and a signed copy is required in order to attend.

Non-Discrimination Policy

The University of Alaska is an affirmative action/equal opportunity employer and educational institution. The University of Alaska does not discriminate on the basis of race, religion, color, national origin, citizenship, age, sex, physical or mental disability, status as a protected veteran, marital status, changes in marital status, pregnancy, childbirth or related medical conditions, parenthood, sexual orientation, gender identity, political affiliation or belief, genetic information, or other legally protected status. The University's commitment to nondiscrimination, including against sex discrimination, applies to students, employees, and applicants for admission and employment. Contact information, applicable laws, and complaint

procedures are included on UA's statement of nondiscrimination available at www.alaska.edu/nondiscrimination.