

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

**ED 581 Professional Learning in Science Education:
Project Learning Tree and Science Standards of Alaska**

Summer 2021

1 Credit, Graded P/NP

Course Sponsor: Alaska Geographic, Murie Science and Learning Center, Denali National Park

Instructor: Molly Gillespie

Education Instructor: Paula Davis

Facilitating Instructor: Chris Conlon

Contact Information Address: Alaska Geographic, Murie Science and Learning Center, P.O. Box 136, Denali Park, AK 99755

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Course Meeting Information

Location: Murie Science and Learning Center, Denali National Park & Preserve entrance

Start and End Date: Session 1: June 26, 2021 to June 29, 2021
Session 2: July 26, 2021 to July 29, 2021
Session 3: August 2, 2021 to August 5, 2021

Class Day(s) & Time(s): Session 1: June 26th, 2021 6:30pm through June 29th, 2021 1pm, continuous residential course
Session 2: July 26th, 2021 6:30pm through July 29th, 2021 1pm, continuous residential course
Session 3: August 2, 2021 6:30 pm through August 5, 2021, 1pm, continuous residential course

Final Project Due: Final day of course

Course Description: In this place-based educators workshop, participants will learn about the unique ecosystem of the boreal forest while experiencing phenomenon based learning activities from Project Learning Tree. With Project Learning Tree's Alaska coordinator Molly Gillespie, participants will gain a deeper understanding of the Science Standards of Alaska and learn how to use hands-on environmental education activities to meet those standards with

students. Participants will be immersed in outdoor teaching and learning techniques throughout the workshop and will go home with Project Learning Tree's *Explore Your Environment: K-8 Activity Guide* to use with their students. Participants will consider how to integrate their learning from this fieldwork course into their teaching or educational environments.

Intended Audience: Teachers and other interested educators

Enrollment Restrictions: None

Course Prerequisite/Co-requisites: None

Course Design:

- a. Requires 15 contact hours and approximately 30 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 Murie Science and Learning Center course will be entirely field-based. Learning will be achieved through lectures, group discussions, field observations, and field activities. This course is based upon the collegial sharing, collaboration, and support of the participants and facilitator as a community of learners. Course activities will include common readings and group discussions, collective learning processes, peer coaching/mentoring, and reflective practices.

Instructional Goals and Defined Outcomes:

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

1.0 Instructional Goal:

Introduce the national environmental education organization, Project Learning Tree (PLT) to participants, including PLT's network, resources and materials by using PLT's new, NGSS correlated guide, *Explore Your Environment: K-8 Activity Guide* to engage in place-based teaching practices, outdoor learning experiences, and Alaska specific field investigation techniques, while exploring the concepts of environmental literacy.

Defined Outcomes:

- 1.1 Participants will examine the Project Learning Tree curriculum and be able to describe key elements of the *Explore Your Environment: K-8 Activity Guide*, and the relevance of the material to their personal teaching goals and practices.
- 1.2 Participants will learn best practices for outdoor teaching and learning methods, and understand the benefits of place-based learning.
- 1.3 Participants will understand the three-dimensions of science instruction
- 1.4 Participants will become familiar with the Alaska Natural Resource and Environmental Literacy Plan.

2.0 Instructional Goal

Introduce participants to the natural history of the Denali National Park and the ecology of boreal forest by examining the plants and animals of the area.

Defined Outcomes

- 2.1 Participants will demonstrate an understanding of the ecology of the boreal forest and describe how they will use that knowledge to connect to the PLT curriculum, and to their classroom practices.
- 2.2 Participants will use their knowledge to describe how they can use place-based learning experiences in their classroom or setting.

THEORY INTO PRACTICE (APPLICATION)

3.0 Instructional Goal:

Engage participants in field investigations, selected PLT activities, place-based outdoor learning experiences, and use nature journals as an approach to engaging in scientific thinking; provide an opportunity for participants to examine how they will use PLT activities to engage in phenomenon based learning.

Defined Outcomes:

- 3.1 Participants will practice and apply outdoor teaching and learning techniques and demonstrate an understanding of using PLT materials to support field investigations and outdoor learning with their audience.
- 3.2 Participants will gain knowledge of how to teach natural journaling, and describe how they will use nature journals to enhance their learner's experience with the natural world.
- 3.3 Participants will describe how they will integrate their experiences and the PLT activities into their teaching or educational setting.

REFLECTION ON THEORY INTO PRACTICE (REFLECTION)

4.0 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:

- 4.1 Participants will review and reflect upon phenomenon based learning and the three-dimensions of science instruction. Participants will complete a journal, reflecting on how the information can be shared with their students.

RELATIONSHIP TO STANDARDS

5.0 Instructional Goal:

Familiarize participants with science content standards addressed by the strategies and concepts presented, while highlighting PLT's connection to three-dimensional science instruction and the Science Standards of Alaska (SSAs).

Defined Outcome:

- 5.1 Participants will identify the Science-Content standards applicable to their classroom.

- 5.2 Participants will be able to describe how PLT's activities can be used as phenomenon based learning tools in correlation with SSAs.

Writing Style Requirements:

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

Attendance and Make-up Policy:

Participants are expected to actively and collegially participate in all classes as a contributing member of a learning community. Attendance at every session is mandatory.

Course Assignments, Assessment of Learning, and Grading System:

Course grading will be Pass/No Pass based upon the following:

- a. Participation 50%
Participants will be expected to actively and collegially participate in discussions, activities, and other process experiences during the seminar.
- b. Final Project - Journal completion 50%
Participants will complete journal assignments to be turned in to MSLC field guide on the last day of class. Assignments will include thoughtful reflection based upon seminar experience and an application plan of how participants will integrate issues and content discussed into their own classroom setting.

Quality of Work

Grade of "Pass"

Passing work includes all components of the assignment and meets proficient criteria. It is focused, developed, supported, logical, and acceptable work with minimal errors. Work of this quality indicates understanding of key concepts and knowledge base.

Grade of "No Pass"

Work graded "No Pass" may lack key criteria/components of the task and show little or no evidence of conceptual understanding or knowledge utilization. Work may also show minimal or no organization/development and/or clear focus (may be difficult to follow) and may contain numerous errors. This grade indicates minimal or no knowledge or concept development. It may also mean that work was not attempted.

- Day 1
 - 6:00 p.m. – 6:30 p.m. Greeting and check in Denali Visitor Center parking lot
 - 6:30 p.m. – 8:00 p.m. Drive to MSLC Field Camp and settle in
 - o Make Nature Journals and discuss using nature journaling to build scientific skills and thinking
- Day 2
 - 9:00 a.m. – 5:00 p.m. Introduction to PLT and Exploration of Denali
 - o Explore PLT's *Explore Your Environment K-8 Activity Guide*
 - o Engage in PLT activities and investigations
 - o Examine relationship of PLT's guide to NGSS and SSAs
 - o Natural History of Denali with NPS educators
 - 6:00 p.m. – 8:00 p.m. Dinner and evening discussions
 - o Teacher study group to discuss the day's activities and how the information can be shared with students

- Identify applicable science content standards addressed by course content

Day 3 9:00 a.m. – 5:00 p.m. Continued Exploration of Denali and PLT

- Engage in Nature Journaling activities
- Engage in PLT activity
- Educator’s choose PLT activity to implement in their classroom and describe what Performance Expectation (from SSAs) it will address
- Ecology of Boreal Forest with NPS educators

6:00 p.m. – 8:00 p.m. Course wrap up

Day 4 9:00 a.m. – 1:00 p.m. Free time for teacher collaboration

Final Project Due: last day of course

Course Texts, Readings, Handouts, and Library Reserve:

Pre-course Readings:

Alaska Department of Fish & Game. (2013). *Alaska Natural Resource and Environmental Literacy Plan*. Harper, Patty and Manning, Elizabeth (editors). Retrieved from <https://www.anroe.net/programs-workshops/environmental-literacy/>

National Research Council, the National Science Teachers Association, the American Association for the Advancement of Science, and Achieve. (2013) *Using Phenomena in NGSS-Designed Lessons and Units*. Retrieved from: [https://www.nextgenscience.org/sites/default/files/Using%20Phenomena%20in%20NGS S.pdf](https://www.nextgenscience.org/sites/default/files/Using%20Phenomena%20in%20NGS%20S.pdf)

State of Alaska Department of Education and Early Development. (2019). *Teacher Primer for the Science Standards for Alaska*. Juneau, AK. Author. Retrieved from (click on top link): <https://education.alaska.gov/search?q=Teacher+Primer&submit=>

Required Text/Materials:

Project Learning Tree. (2021). *Explore Your Environment: K-8 Activity Guide*. Washington, D.C.: Sustainable Forestry Initiative. This will be provided at the start of the course.

Suggested Text/Material:

Alaska Department of Fish & Game. (2001). *Alaska Wildlife Curriculum: Alaska’s Forests and Wildlife*. Anchorage, Alaska. Alaska Department of Fish and Game. Free download available from <https://www.adfg.alaska.gov/index.cfm?adfg=alaskawildlifecurriculum.forestswildlife>

Alaska Department of Fish & Game. (2001). *Alaska Ecology Cards*. Anchorage, Alaska. Alaska Department of Fish & Game. Free download available from: <https://www.adfg.alaska.gov/index.cfm?adfg=curricula.awc>

Laws, John Muir and Lygren, Emilie. (2020). *How to Teach Nature Journaling*. Berkeley, CA: Heyday.

Pratt, Verna. (1993). *Wildflowers of Denali National Park*. Alaskakrafts, INC.

USDA US Forest Service. (2009). *Common Trees of Alaska*. US Forest Service, Alaska Region.

Supplemental information can be found in the following sources:

Content References:

National Research Council (NRC) of the National Academies and Board on Science Education. (2012). *A framework for K-12 science education: Practices, crosscutting concepts, and core ideas*. Washington, DC: National Academies Press. Free download retrieved from: <http://www.nap.edu/catalog/13165/a-framework-for-k-12-science-education-practices-crosscutting-concepts>

North American Association for Environmental Education. (2021). *Environmental education materials: Guidelines for excellence*. Washington, D.C. Retrieved from: <https://naaee.org/eepr/resources/environmental-education-materials>

North American Association for Environmental Education. (2021). *K-12 Environmental education: Guidelines for excellence*. Washington, D.C. Retrieved from: <https://naaee.org/eepr/resources/k-12-environmental-education-guidelines>

Regents of the University of California, Berkeley. (2020). *NGSS Science and Engineering Practices in Outdoor Science Programs*. NAAEE Conference Presentation. beetlesproject.org. Retrieved from <http://beetlesproject.org/cms/wp-content/uploads/2021/03/Website-Copy-of-NGSS-Science-Engineering-Practices-in-Outdoor-Science-Programs.pdf>

Regents of the University of California, Berkeley. (2021). [Beetles Project: Science and Teaching for Field Educators](#). Lawrence Hall of Science.

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>

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). *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

State of Alaska Department of Education and Early Development. (2016). *Content and performance standards for Alaska students*. Juneau, AK: Author. Retrieved from:
<https://education.alaska.gov/akstandards/standards/ContentStandards.pdf?v=1>

Alignment with College 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 College of Education as we encourage lifelong learning to meet the challenges of a rapidly changing world.

Link to Standards for Alaska Teachers:

This professional development effort is firmly rooted in the fundamentals of the standards for Alaska Teachers. It is offered to encourage and support practicing educators in attaining, maintaining, or surpassing the standards that, as stated in Standards for Alaska's Teachers, "define the skills and abilities our teachers and administrators need to possess to effectively prepare today's students for successful lives and productive careers." (Roger Sampson, <http://www.eed.state.ak.us/standards/pdf/teacher.pdf>)

Course Policies:

Incomplete Grades

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

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 Business Education Building (BEB105) 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 College 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 College 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. The 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.