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

ED 581
Professional Learning in Science Education:
Wildflowers of Denali

1 Credit, Graded P/NP
Summer 2022

Course Sponsor:	Alaska Geographic, Murie Science and Learning Center, Denali National Park
Instructor:	Lisa Strecker
Educational Resource:	Paula Davis
Primary Grading Instructor:	David Arnold
Facilitating Instructor:	Jessica Brillhart
Contact Information	
Address:	Alaska Geographic, Murie Science and Learning Center P.O. Box 136, Denali, AK 99755
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Email Address:	courses@alaskageographic.org
Course Meeting Information	
Location:	Murie Science and Learning Center, Denali National Park & Preserve entrance
Start and End Date:	June 17, 2022 to June 19, 2022
Class Day(s) & Time(s):	June 17th, 6:30pm through June 19th, 4pm, continuous residential course
Final Project Due:	last day of class
Course Description:	During this course participants will explore the wildflowers of the tundra and taiga. Fieldwork will consist of identifying wildflowers by sight and utilizing hand lenses and field guides when necessary. Participants will study how subarctic flora adapt to extreme latitude and high elevation while exploring how global change affects these plants and their habitats. In addition, the relationships between selected plants and people from different cultures in the circumpolar North will be addressed. This course is an introductory course to Denali's wildflowers and other plants. Participants will also consider how to integrate their learnings 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:
The instructor will familiarize the participants with common botanical terms, vocabulary and the different biomes within Denali National Park.

Defined Outcomes:
1.1 Participants will identify specimens using botanical terminology.
1.2 Participants will identify flowers and their families.
1.3 Participants will identify and explain the differences between the taiga habitat and the tundra habitats within Denali National Park.
1.4 Participants will understand how subarctic flora adapt to extreme latitude and high elevation.

2.0 Instructional Goal:
The instructor will present the course content with a focus on plant distribution and anthropogenic influences of these patterns.

Defined Outcomes:
2.1 Participants will gain a basic understanding of how the biomes of Denali National Park fit into the larger terrestrial ecosystems of global distribution.
2.2 Participants will see influences of climate change on a local scale and discuss other impacts of global change onto the plants of the park.
2.3 Participants will become familiar with the concept of the Anthropocene.

3.0 Instructional Goal:
The instructor will introduce participants to the interdisciplinary field of ethnobotany and use selected plants to highlight human-plant relationships of the circumpolar North.

Defined Outcomes:
3.1 Participants will be able to define the academic discipline of ethnobotany

3.2 Participants will recognize and familiarize themselves with at least five culturally relevant plants of Alaska and the circumpolar North.

3.3 Participants will be aware of issues related to cultural appropriation, importance of correct attribution of plant-related knowledge, mindfulness and self-reflection.

THEORY INTO PRACTICE (APPLICATION)

4.0 Instructional Goal:

The instructor will teach the participants the skills for identifying plants and utilizing plant identification tools, such as hand lens, dichotomous keys and field guides.

Defined Outcomes:

4.1 Participants will demonstrate their field skills and identify the common flowers of Denali National Park.

4.2 Participants will describe how they will integrate their experiences into their teaching or educational environments.

REFLECTION ON THEORY INTO PRACTICE (REFLECTION)

5.0 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 the information can be shared with their students.

RELATIONSHIP TO STANDARDS

6.0 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.

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.

Course Calendar/Schedule:

Friday
- 6:00 p.m. – 6:30 p.m. Greeting and check in at MSLC
- 6:30 p.m. – 8:00 p.m. Introduction, orientation & overview
  - Brief introduction of Denali's flowering plants
- 8:00 p.m. – 9:00 p.m. Drive to MSLC Field Camp

Saturday
- 9:00 a.m. – 5:00 p.m. Exploration of Denali – both taiga and tundra habitats
  - Identification of common wildflowers
  - Investigation of adaptive strategies of Denali's flowering plants
- 6:00 p.m. – 8:00 p.m. Dinner and evening discussions
  - Review of plants seen today
  - 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

Sunday
- 9:00 a.m. – 3:00 p.m. Continued exploration of Denali
  - Continued study and identification of Denali's flowering plants
- 3:00 p.m. – 4:00 p.m. Return drive to MSLC

Final Project Due: last day of course

Course Texts, Readings, Handouts, and Library Reserve:

Suggested Text/Material:

Elpel, T. J. (2010). *Botany in a day: the patterns method of plant identification*. Pony (Montana): Hops Press.

National Park Service (2016). DenaliFlora–An Electronic Field Guide for Your Mobile Device. Retrieved from: https://www.nps.gov/articles/denali-crp-plant-app.htm

National Park Service. *Plants.* Retrieved from: https://www.nps.gov/dena/learn/nature/plants.htm

Pratt, V., & Pratt, F. G. (Ed.). (1993). *Wildflowers of Denali National Park.* Anchorage, AK: Alaskakrafts Publishing.

Roland, C., & Stehn, S. (n.d.). Ecological Atlas of Denali's Flora. Retrieved from http://ecologicalatlas.uaf.edu/

Supplemental information can be found in the following sources:

Content References:

Harris, J. and Harris, M. (2001). *Plant identification terminology: an illustrated glossary second edition*. Payson, UT: Spring Lake Publishing

Hultén, E. (1968). *Flora of Alaska and neighboring territories: A manual of the vascular plants.* Stanford, CA: Stanford University Press.

Kaplan, E. (1996). *Taiga: Biomes of the world.* New York: Benchmark Books.

Roland CA. (2004). *The Vascular Plant Floristics of Denali National Park and Preserve: A Summary, Including the Results of Plant Inventory Fieldwork 1998-2001*. CAKN-04-01. Denali Park, Alaska

Schofield, J. (1989). *Discovering wild plants: Alaska, western Canada, and the Northwest.* Anchorage, AK: Alaska Northwest Books.

Trelawny, J. G. S., & Trelawny, J. G. S. (2003). *Wild flowers of the Yukon, Alaska & northwestern Canada*. Madeira Park, BC: Harbour Pub.

U.S. Department of the Interior, [et al.]. (2005) *Invasive plants of Alaska.* Washington, DC: Supt. of Docs., U.S. Government Office.

Zomlefer, W. (1994). *Guide to flowering plant families.* Chapel Hill, NC: University of North Carolina Press.

Zwinger, A. H., & Willard, B. E. (1989). *Land above the trees: A guide to American alpine tundra.* Boulder, CO: Johnson Books.

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. (2016). *Content and performance standards for Alaska students.* Juneau, AK: Author. Retrieved from: https://education.alaska.gov/akstandards/standards/ContentStandards.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:
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 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.