

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

**ED 581 Professional Learning in Science Education:  
Denali's Large Mammals: Past, Present, and Future**

**1 Credit, Graded P/NP**

**Summer 2017**

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

**Instructor:** NJ Gates

**Education Instructor:** Sarah Warnock

**Facilitating Instructor:** David Tomeo

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

**Telephone:** (907) 683-6432

**Email address:** [courses@alaskageographic.org](mailto:courses@alaskageographic.org)

**Course Meeting Information**

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

**Start and End Date:** **Session 1:** June 30, 2017 to July 2, 2017  
**Session 2:** August 4, 2017 – August 6, 2017

**Class Day(s) & Time(s):** **Session 1:** June 30th, 6:30pm through July 2nd, 4pm, continuous residential course  
**Session 2:** August 4th, 6:30pm through August 6th, 4pm, continuous residential course

**Final Project Due:** Last day of class.

**Course Description:** 100 years ago, Alaska's first national park, what is now Denali National Park and Preserve, was set aside as a game refuge to protect wildlife populations. Participants will celebrate Denali's centennial and the conservation of wildlife habitat by learning about and observing Denali's iconic large mammals. With Alaska Geographic educator NJ Gates, this field course will explore the natural history and habitat of Denali's "Big Five": bears, wolves, sheep, caribou, and moose. Participants will take a look at large mammal research, populations and changes to the ecosystem over the last 100 years and contemplate what the next 100 years may hold for these species. Participants will consider how to integrate their learning from this fieldwork course into their teaching or educational environments.

**Intended Audience:** Teachers and Adults (18+)

**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 introduce the natural history of Denali National Park to the participants, in particular the large mammals such as Dall sheep, grizzly bears, wolves, caribou and moose. Introduce the ecological niches and interdependency of each species.

Defined Outcome:

- 1.1 Participants will demonstrate an understanding of the characteristics of Denali's unique ecosystem.
- 1.2 Participants will demonstrate an understanding of the natural history of the Denali's large mammals.
- 1.3 Participants will demonstrate an understanding of the common behavior of these mammals.

2.0 Instructional Goal:

The instructor will review past history and habitat of large mammals in Denali beginning in 1917 using texts and ranger reports. Discussion will take place regarding the future of Denali's large mammals given the predicted projections of the effects of climate change.

Defined Outcome:

- 2.1 Participants will demonstrate an understanding of the habitat change and fluctuation in large mammal populations over the past 100 years.
- 2.2 Participants will have gained an understanding and appreciation of the predicted changes in order to discuss the possible outcomes for large mammals in Denali 100 years into the future.

THEORY INTO PRACTICE (APPLICATION)

3.0 Instructional Goal:

The instructor will introduce the research efforts in Denali National Park and present the facets of several current research projects, the methodologies and management of Denali's mammals through hands-on demonstration.

Defined Outcome:

- 3.1 Participants will demonstrate knowledge of the research efforts in the National Park Service.

- 3.2 Participants will demonstrate knowledge of the current research projects, research methodologies, and management issues facing the National Park Service.
- 3.3 Participants will consider how to integrate these learnings into their educational settings.

#### 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 the information can be shared with their students.

#### RELATIONSHIP TO 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.

#### **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, but are not limited to, 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. – 7:30 p.m.	Introduction, orientation & overview <ul style="list-style-type: none"><li>○ Introduction of Denali’s large mammals - natural history facts</li></ul>
	7:30 p.m. – 8:30 p.m.	Drive to MSLC Field Camp and settle in <ul style="list-style-type: none"><li>○ Introduction of the Denali ecosystem by observing what is out the window</li><li>○ Explain difference of taiga and tundra and why large mammals can be found in each</li></ul>
	8:30 p.m. – 9:30 p.m.	Walk and evening discussions <ul style="list-style-type: none"><li>○ Walk along the Teklanika River and learn about river drainages as animal “highways” through tracks</li><li>○ Introduce exercises that can be used in the classroom</li></ul>
Saturday	9:00 a.m. – 5:00 p.m.	Exploration of Denali <ul style="list-style-type: none"><li>○ This day will be comprised of hiking and observing in order to better understand large mammals and their habitats</li><li>○ Introduce predator/prey relationships</li></ul>
	6:00 p.m. – 8:00 p.m.	Dinner and evening discussions <ul style="list-style-type: none"><li>○ Discussion of current research with large mammals</li><li>○ Discussion of habitat(s) visited today and possible predictions of climate change to these habitats</li><li>○ Teacher study group to discuss the day’s activities and how the information can be shared with students</li><li>○ Identify applicable science content standards addressed by course content</li></ul>
Sunday	9:00 a.m. – 3:00 p.m.	Continued exploration of Denali <ul style="list-style-type: none"><li>○ Continue hiking, observing, discussing large mammal habitat, predator/prey interactions, and effects of climate change with regard to large mammal populations</li><li>○ Final discussion regarding conservation</li></ul>
	3:00 p.m. – 4:00 p.m.	Return drive to MSLC

**Final Project Due:** Final day of course

## Course Texts, Readings, Handouts, and Library Reserve:

### Required Text/Materials:

Adams, L., Meier, T., Owen, P. and Roffler, G. Interrelationships of Denali's Large Mammal Community. *Alaska Park Science - Volume 5 Issue 1: Scientific Studies in Denali*. Retrieved from: <https://www.nps.gov/articles/aps-v5-i1-c9.htm>

Murie, A., Murie, A., & United States. (1994). *Mammals of Denali*. Denali Park, Alaska: Published by the Alaska Natural History Association in cooperation with the National Park Service.

### Suggested Text/Materials:

Adams, L., Burch, J., and Meier, T. Tracking the Movements of Denali's Wolves. *Alaska Park Science - Volume 5 Issue 1: Scientific Studies in Denali*. Retrieved from: <https://www.nps.gov/articles/aps-v5-i1-c8.htm>

Denali National Park and Preserve. Grizzly Bear Population Ecology in Denali. *Alaska Park Science - Volume 6 Issue 2: Crossing Boundaries in a Changing Environment*. Retrieved from: <https://www.nps.gov/articles/aps-v6-i2-c15.htm>

Haber, G. Wolf Foraging and Related Social Variations in Denali National Park. *Alaska Park Science - Volume 6 Issue 2: Crossing Boundaries in a Changing Environment*. Retrieved from: <https://www.nps.gov/articles/aps-v6-i2-c17.htm>

Rawson, Timothy. *Changing Tracks: Predators and Politics in Mt. McKinley National Park*. Fairbanks, AK: Published by the University of Alaska Press. 2001.

Van Ballenberghe, Victor. (nd) *Rutting Behavior of Moose*. Retrieved from: <https://www.nps.gov/articles/aps-v5-i1-c7.htm>

Walker, Tom. *Denali Journal*. Denali Park, Alaska: Raven Ridge Press. 2010.

Supplemental information can be found in the following sources:

### Content References:

Alaska Department of Fish & Game, (1994). *The Alaska Department of Fish and Games wildlife notebook series*. Juneau, AK: Public Communications Sections- State of Alaska. Retrieved from: <http://www.adfg.alaska.gov/index.cfm?adfg=educators.notebookseries>

Brown, G. (1993). *The great bear almanac*. New York, NY: Lyons & Burford Publishers

Mech, L. D. (1998). *The wolves of Denali*. Minneapolis: University of Minnesota Press.

Murie, A., & United States. (1981). *The grizzlies of Mount McKinley*. Washington, D.C: U.S. Dept. of the Interior, National Park Service.

Murie, A. (1985). *The wolves of Mount McKinley*. Seattle: University of Washington Press.

Valdez, R. & Krausman, P. (Eds.) (1999). *Mountain sheep of North America*. Tuscon, AZ: University of Arizona Press

Van Ballenberge, V. (2004). *In the company of moose*. Mechanicsburg, PA: Stackpole Books.

Walker, Tom. (2000). *Caribou: Wanderer of the Tundra*. Portland, OR: Graphic Arts Center Publishing.

#### 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:

[http://www.eed.state.ak.us/standards/pdf/cultural\\_standards.pdf](http://www.eed.state.ak.us/standards/pdf/cultural_standards.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>.

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>

State of Alaska Department of Education and Early Development. (1997). *Standards for Alaska teachers*. Juneau, AK: Author. Retrieved from:

<http://www.eed.state.ak.us/standards/pdf/teacher.pdf>

State of Alaska Department of Education and Early Development. (2006). *Content and performance standards for Alaska students*. Juneau, AK: Author. Retrieved from:

<http://education.alaska.gov/akstandards/standards/standards.pdf>

#### **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](http://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. Acknowledgement of Risk form will be provided at the time of registration and a signed copy is required in order to attend.