

1. Course information: title, number, credits, prerequisites, location, meeting time.
Arctic Ecosystems (Special Topics); BIOL 493/693; 2 credits; No prerequisites except permission of the instructor; Irving 201; Tues 4-6 pm

2. Instructor (and if applicable, Teaching Assistant) information: name, office location, office hours, telephone, email.

Prof. D.A. (Skip) Walker; Office: Arctic Health 253; office hours: by appointment; 474-2460; ffdaw@uaf.edu

3. Course readings/materials: course textbook, author, publisher. Supplementary readings (indicate whether required or recommended) and any supplies required.

Bliss, L.C. Arctic Ecosystems of North America. pp. 551-683, in Wiegolawski, F.E. *Polar and Alpine Tundra*. Elsevier: Amsterdam, 1997.

Chernov, Yu.I. and N.V. Matveyeva. Arctic Ecosystems in Russia. pp. 361-507, in Wiegolawski, F.E. *Polar and Alpine Tundra*. Elsevier: Amsterdam, 1997.

These are fairly comprehensive chapters that treat climate, geomorphology, animals, permafrost, etc. They contrast some of the differences in the approach used in Russia and North America to study these systems. They are good reviews of the literature as of the early 1990s, and illustrate some of the problems when comparing studies from these two regions.

4. Course description: content of the course and how it fits into the broader curriculum; expected proficiencies required to undertake the course, if applicable. May include, and must be consistent with, catalog course description.

This course will examine the tundra ecosystems of Arctic Russia and North America. The emphasis will be on the factors controlling vegetation patterns. Topics include Arctic climate, permafrost, geomorphology, soils, animals, zonation, paleogeography, plant communities, floristics, plant adaptations, and succession patterns. Although the focus will be on vegetation, the course will be appropriate for biologists and non-biologists working in or having interest in the Arctic. I will start the course with two over-view lectures on the Arctic. We will then proceed through the chapters and hold weekly discussions on the readings. At these discussion groups, be prepared for an in-depth analysis of the reading material.

5. Course Goals (more general) and Student Learning Outcomes (provide examples)

Major goal is to provide students with a basic understanding of how Arctic ecosystems function, their major components, and why they are different from the other major global ecosystems.

6. Instructional methods: describe the teaching techniques (eg: lecture, case study, small group discussion, private instruction, studio instruction, values clarification, games, journal writing, use of Blackboard, audio/video conferencing, etc.).

Course will be a seminar with two introductory lectures by the instructor followed by seminars each week given by students addressing each of the topics in the course calendar (below). Each lecture will be followed by a group discussion of the contents

of the week's reading assignment.

7. Course calendar: a schedule (daily or weekly major topics or assignments). You may call the outline Tentative or Work in progress to allow for modifications during the semester.

Week 1 (meet on Tues Sep 6): Overview of Arctic Ecosystems I. READINGS: Bliss: p. 551-552; Chernov and Matveyeva p. 361-366.

Week 2 (Sep 13) Overview of Arctic Ecosystems II. READINGS: Bliss, p. 551-552; Chernov and Matveyeva p. 366-368.

Week 3 (Sep 20): Climate and zonation. READINGS: Bliss, p. 568-587; Chernov and Matveyeva p. 367-374.

Week 4 (Sep 27): Permafrost, geomorphology, and soils. READINGS: Bliss, p. 553-568; Chernov and Matveyeva p. 374-376.

Week 5 (Oct 4): Soils READINGS: Bliss, p. 551-552; Chernov and Matveyeva p. 366-368.

Week 6 (Oct 11): Plant communities and floristics I. READINGS: Bliss, p. 587-619;

Week 7 (Oct 18): Plant communities and floristics II. READINGS: Chernov and Matveyeva p. 377-417.

Week 8 (Oct 25): S. Walker in Woods Hole.

Week 9 (Oct 31): Dynamics of tundra systems I. READINGS: Bliss, p. 619-621; Chernov and Matveyeva p. 417-460.

Week 10 (Nov 8): Adaptations of plants to arctic environments. READINGS: Bliss, p. 621-639.

Week 11 (Nov 15): History of Arctic ecosystems: Bliss, p. 640-652,

Week 12 (Nov 22): Animals: Bliss, p. 652-669; Chernov and Matveyeva, p. 460-495.

Week 13: (Nov 29) Arctic ecosystems (2 hr) Bliss, p. 652-669 Graduate student final papers due Nov 30.

8. Course policies: specify course rules, including your policies on attendance, tardiness, class participation, make-up exams, and plagiarism/academic integrity. **Students are expected to attend each lecture. No exams. The course will be Pass/Fail.**

9. Evaluation: specify how students will be evaluated, what factors will be included, their relative value, and how they will be tabulated into grades (on a curve, absolute scores, etc.)

Determination of whether the student passes will be based on the following criteria

Participation in weekly discussions (20 pts per week): 200 pts

Lecture over topic of choice: 100 pts

BIOL 697 (graduate students) paper 100 pts

Graduate students will prepare a 10-15 page paper on a related topic of their choice due at the end of the semester.

10. Support Services: describe the student support services (local and/or regional) appropriate for the course. **Not applicable.**

11. Disabilities Services: The Office of Disability Services implements the Americans with Disabilities Act (ADA), and insures that UAF students have equal access to the campus and course materials. State that you will work with the Office of Disabilities Services (203 WHIT, 474-7043) to provide reasonable accommodation to students with disabilities.”