

Submit original with signatures + 1 copy + electronic copy to Faculty Senate (Box 7500).
See <http://www.uaf.edu/uafgov/faculty-senate/curriculum/course-degree-procedures/> for a complete description of the rules governing curriculum & course changes.

TRIAL COURSE OR NEW COURSE PROPOSAL
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SUBMITTED BY:

Department	Biology and Wildlife	College/School	CNSM
Prepared by	Donald A. Walker	Phone	X2460
Email Contact	dawalker@alaska.edu	Faculty Contact	Donald A. Walker

1. ACTION DESIRED*(CHECK ONE):*

Trial Course

New Course

2. COURSE IDENTIFICATION:

Dept

BIOL

Course #

4_ / 6_

No. of Credits

3

Justify upper/lower division status & number of credits:

Justification for upper division: The Arctic Vegetation Ecology: Geobotany course will include detailed background and literature study of Arctic plant communities including their composition, structure, paleo-history, major environmental controls, applications of Arctic vegetation methods to current Arctic issues such as climate change, wildlife management, and changing land-use in the Arctic. It will also provide an in depth look at winter vegetation ecology and hands-on introduction of arctic vascular plants, mosses, and lichen. The course requires a solid foundation in basic biology (Biol 115 & 116) and either Introduction to Plant Biology (BIOL 239), Principles of Ecology (BIOL 271).

Justification for graduate 600 stacking: Graduate students will be expected to accomplish a greater depth of research than expected of the undergraduates. This will be demonstr

5. To be STACKED? YES/NO	Yes	If yes, Dept.	BIOL	Course #	6__
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6. FREQUENCY OF OFFERING:	Spring
	Fall, Spring, Summer (Every, or Even-numbered Years, or Odd-numbered Years) — or As Demand Warrants

7. SEMESTER & YEAR OF FIRST OFFERING (AY2011-12 if approved by 3/1/2012; otherwise AY2012-13)	Spring AY2013, even numbered years thereafter
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8. COURSE FORMAT:

NOTE: Course hours may not be compressed into fewer than three days per credit. Any course compressed into fewer than six weeks must be approved by the college or school's curriculum council. Furthermore, any core course compressed to less than six weeks must be approved by the core review committee.

COURSE FORMAT: (check all that apply)	<input type="checkbox"/> 1	<input type="checkbox"/> 2	<input type="checkbox"/> 3	<input type="checkbox"/> 4	<input type="checkbox"/> 5	<input checked="" type="checkbox"/> 6 weeks to full semester
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OTHER FORMAT (specify)	
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Mode of delivery (specify lecture, field trips, labs, etc)	3-credit-hour lecture course, with lectures and 1 field trip
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9. CONTACT HOURS PER WEEK:	See below	LECTURE hours/weeks	9	LAB hours total	480	PRACTICUM hours total
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Note: # of credits ~~is~~ based on co

12. COURSE REPEATABILITY:

Is this course repeatable for credit?

YES

NO

Carol Diebel have been contacted (email: September 1, 2011).

21. POSITIVE AND NEGATIVE IMPACTS

*Please specify **positive and negative** impacts on other courses, programs and departments resulting from the proposed action.*

Positive impacts:

- 1) A much needed course in Arctic vegetation using an interdisciplinary geobotanical approach in the lectures and field. Increasingly needed for multi-disciplinary academic approaches to study, understand, manage, and preserve complex and changing Earth systems.
- 2) Field training in winter ecology, which has traditionally been missing.
- 3)

See attached signatures.

REFER TO PAGE ABOVE FOR LATEST EDITS TO #21 and Justification blocks.

21. POSITIVE AND NEGATIVE IMPACTS

Please specify positive and negative impacts on other courses, programs and departments resulting from the proposed action.

This lecture course is part of 3-course curriculum for arctic vegetation science (see cover letter). These courses are much needed. Previously only one 2-hour course was offered in Vegetation Description and Analysis (BIOL 475). A much needed aspect of training students in vegetation science is extensive field experience. Getting students out and observing the plants and vegetation patterns in Nature cannot be

ALL SIGNATURES MUST BE OBTAINED PRIOR TO SUBMISSION TO THE GOVERNANCE OFFICE

Date

ATTACH COMPLETE SYLLABUS (as part of this application). Note: The guidelines are online:

<http://www.uaf.edu/uafgov/faculty-senate/curriculum/course-degree-procedures-/uaf-syllabus-requirements/>

The Faculty Senate curriculum committees will review the syllabus to ensure that each of the items listed below are included. If items are missing or unclear, the proposed course (or changes to it) may be denied.

SYLLABUS CHECKLIST FOR ALL UAF COURSES

During the first week of class, instructors will distribute a course syllabus. Although modifications may be made throughout the semester, this document will contain the following information (as applicable to the discipline):

1. Course information:

Title, number, credits, prerequisites, location, meeting time
(make sure that contact hours are in line with credits).

2. Instructor (and if applicable, Teaching Assistant) information:

Name, office location, office hours, telephone, email address.

3. Course readings/materials:

Course textbook title, author, edition/publisher.

Supplementary readings (indicate whether required or recommended) and any supplies required.

4. Course description:

Content of the course and how it fits into the broader curriculum;

Expected proficiencies required to undertake the course, if applicable.

Inclusion of catalog description is *strongly* recommended, and

Description in syllabus must be consistent with catalog course description.

5. Course Goals (general), and (see #6)

6. Student Learning Outcomes (more specific)

7. 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.).

8. Course calendar:

A schedule of class topics and assignments must be included. Be specific so that it is clear that the instructor has thought this through and will not be making it up on the fly (e.g. it is not adequate to say "lab". Instead, give each lab a title that describes its content). You may call the outline Tentative or Work in Progress to allow for modifications during the semester.

9. Course policies:

Specify course rules, including your policies on attendance, tardiness, class participation, make-up exams, and plagiarism/academic integrity.

10. 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.) Publicize UAF regulations with regard to the grades of "C" and below as applicable to this course. (Not required in the syllabus, but may be a convenient way to publicize this.) Faculty Senate Meeting #171:

<http://www.uaf.edu/uafgov/faculty-senate/meetings/2010-2011-meetings/#171>

11. Support Services:

Describe the student support services such as tutoring (local and/or regional) appropriate for the course.

12. 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 (208 WHITAKER BLDG, 474-5655) to provide reasonable accommodation to students with disabilities.

6/30/2011

**Preliminary Syllabus for NEW COURSE,
BIOL 4__ / 6__, Arctic Vegetation Ecology: Geobotany
Spring 2013**

1. Course information

Title: Arctic Vegetation Ecology: Geobotany

Number: BIOL 4__ / 6__

Credits: 3

Prerequisites: BIOL 115 & 116, Introduction to Plant Biology (BIOL 239) or Principles of Ecology (BIOL 271) or instructor approval

Location: [201 Irving I](#)

Meeting time: T/Th, 2:00-3:30 pm

2. Instructor and contact information

Prof. D.A. (Skip) Walker, Alaska Geobotany Center, University of Alaska Fairbanks, Arctic Health Building, Room 254, 474- 2460, dawalker@alaska.edu. Office hours: T, Th 9:00-11:00 and 3:30-5:00 pm.

3. Course readings /materials

Numerous papers will be read and are in the assignments listed in the course calendar and will be posted on line at <http://www.geobotany.uaf.edu>. These three references provide a good overview of the Arctic Vegetation in North America and Russia and the current issues relevant to Arctic vegetation.

1. Bliss, L.C. 1997. Arctic Ecosystems of North America. Polar and Alpine Tundra. Elsevier. Amsterdam. pp. 551-683.
2. Callaghan, T.V., Bjorn, L.O., Chapin III, F.S., et al. 2005. Chapter 7, Arctic tundra and polar desert ecosystems. Arctic Climate Impact Assessment - Scientific Report. Cambridge University Press. Cambridge. pp. 243-352.
3. Chernov, Y.I., Matveyeva, N.V. 1997. Arctic ecosystems in Russia. Polar and Alpine Tundra. Elsevier. Amsterdam. 3 pp. 361-507.

Required supplies:

10x-power hand lens for field identification of snow grains and plant specimens.

8.5 x 11-inch notebook or field book for field reference collection and methods notes.

Back country skis or snow shoes with appropriate boots and poles,

Clothing adequate for spending a full day outdoors during winter conducting field work.

(including day pack, rain gear (top & bottom, necessary for digging qinzhee), warm winter clothing, including long underwear, sweater, boots, parka, warm ski cap, gloves, sun glasses, sun protection).

Sleeping bag and pad.

Water bottle, sack lunches

A full list of equipment and expectations for the field trip will be provided well before the field trip.

4. Course description

Course catalog description:

BIOL F4__ Arctic Vegetation Ecology: Geobotany

3 Credits Offered Spring

Arctic plants in relationship to the Earth, including arctic plant identification, climate, geology and geography controls on arctic plant communities, snow ecology, applications to wildlife studies and current Arctic issues. Lectures, discussion sessions, labs, and 1 winter field trip. Prerequisites: BIOL 115 and 116 or equivalent; BIOL 239 or BIOL 271; or approval of instructor. Special fees apply. Stacked with BIOL F6__ (2 + 0.5 + 0.5). Spring 2013 and even numbered years thereafter.

Expected proficiencies for taking the course: Ability to read, comprehend, and assimilate written information in scientific texts and journals; basic math skills (including algebra); basic word processing and spreadsheets; basic writing and presentation skills, background in biology, ecology, and plants and/or other biological or Earth sciences such as geology, geomorphology, zoology, c

are important. **Total time for each paper discussion is 30 minutes.** Both discussion groups in total should take 60 minutes to present the two papers.

3. At the end a general discussion, the entire class will compare and contrast the two papers and discuss their contribution to the literature on the topic.
4. Students making the presentation will be graded on criteria that will be handed out early in the semester. All students will be graded on their full participation in the presentations and discussions.

Oral and written presentation of research topics:

At the end of the lecture series (Lesson 23-29), each student will present a 30-minute oral summary of a library research topics of the student's choice — as long as the topics involve Arctic vegetation ecology. Guidelines for these presentations will be handed out early in the semester. Graduate students will be expected to also turn in a 2000-3000-word paper on an Arctic Vegetation topic of their choice at the end of the course. This paper can (but not necessarily) cover the same topic as the oral presentation.

Snow Ecology field trip:

A 3-day mandatory field excursion will occur the first weekend of spring break. Students should plan in advance to attend. We will visit a variety of sites with different snow

7. Course Schedule and Assignments:			
Lesson	Dates (to be adjusted for 2013)	Topic	Reading assignment (available online at the course web site http://www.geobotany.uaf.edu/):
1	Jan 19	Introduction	
2-3	Jan 24, 26	Lectures 1-2: Overview of Arctic Ecosystems: The role of climate and topography	Callaghan, T.V., Bjorn, L.O., Chapin III, F.S., et al. 2005. Chapter 7, Arctic tundra and polar desert ecosystems. Arctic Climate Impact Assessment - Scientific Report. Cambridge University Press. Cambridge. pp. 243-352. This is an excellent summary of the current state of knowledge of Arctic terrestrial ecosystems. Use as a standard reference, skim it now, begin reading and complete by Mar 1, Lesson 12.
4	Jan 31		

			nitrogen mineralization in Alaskan Arctic tundra. <i>Arctic, Antarctic, and Alpine Research</i> , 40: 27-38. Sturm, M., J. P. McFadden, G. E. Liston, F. S. Chapin, III, C. H. Racine, and J. Holmgren, 2001. Snow-shrub interactions in Arctic tundra: a hypothesis with climatic implications. <i>Journal of Climate</i> , 14 , 336-344.
13	Mar 1	Literature Discussion 4	Discussion Group 1: Pomeroy, J.W. and E. Brun. 2001. Physical properties of snow. In: Jones, H.G., J. Pomeroy, D.A. Walker, and R. Hoham (eds.) <i>Snow Ecology</i> . Cambridge: Cambridge University Press, pp. 45-117. <u>And</u> Sturm, M. et al. 2001. Snow-shrub interactions in Arctic tundra: a hypothesis with climatic implications. <i>Journal of Climate</i> , 14 , 336-344. Discussion Group 2: Tranter, M. and G. Jones. 2001. In: Jones, H.G., J. Pomeroy, D.A. Walker, and R. Hoham (eds.) <i>Snow Ecology</i> . Cambridge: Cambridge University Press, pp. 127--156. <u>And</u> Borner, A.P., K. Kielland, and M.D. Walker. Effects of simulated climate change on plant phenology and nitrogen mineralization in Alaskan Arctic tundra. <i>Arctic, Antarctic, and Alpine Research</i> , 40: 27-38.
	Mar 6 & 8		No class. Field trip instead Mar 9-11.
14-16	Mar 9-11	<i>Spring Break field trip to Cantwell cabin Turn in field notebook and snow pit descriptions at end of field trip</i>	
17	Mar 20	Lecture 9: Arctic Vegetation Mapping	Raynolds, M.K., Walker, D.A., Maier, H.A. 2006. Alaska Arctic Tundra Vegetation Map. 1:4,000,000. U.S. Fish and Wildlife Service. Anchorage, AK. Walker, D.A., Maier, H.A. 2008. Vegetation in the Vicinity of the Toolik Lake Field Station, Alaska. Biological Papers of the University of Alaska, No. 28, Institute of Arctic Biology. Walker, D.A., Raynolds, M.K., Daniëls, F.J.A., et al. 2005. The Circumpolar Arctic Vegetation Map. <i>Journal of Vegetation Science</i> . 16:(3): 267-282.
18	Mar 22	Lecture 10: Climate change and circumpolar Arctic vegetation	Bhatt, U.S., Walker, D.A., Raynolds, M.K., et al. 2010. Circumpolar Arctic tundra vegetation change is linked to sea-ice decline. <i>Earth Interactions</i> . 14:(8):1-20.

<http://www.uaf.edu/library/instruction/handouts/Plagiarism.html>

Attendance policy:

Students are expected to attend every class and lab and be seated at the beginning of the class. Student will receive 10 points for attendance at each lecture and each of the student oral presentation classes.

9. Evaluation:

Summary of grading points:

Attendance at lectures and labs (10 pts/class, 30 classes)	300 pts
Oral presentation of research topic	200
Snow Ecology snow pit descriptions & field book	100
Final Lecture Exam	200
<u>Final plant identification exam</u>	<u>200</u>
TOTAL	1000 pts

Attendance at lectures and labs (10 pts/class, 30 classes)	300 pts
Oral presentation of research topic	200
Snow Ecology snow pit descriptions & field book	100
Final plant identification exam	200
Final research paper	200
Lecture on literature review (discussion session)	100
<u>Moderator for discussion session (50 pts)</u>	<u>50</u>
TOTAL	1350 pts

These criteria may be modified somewhat as the course progresses.

Final grades will be as follows: greater than or equal to 90% = A; 80-89% = B; 70-79% = C; 60-69% = D; < 60% = F.

Undergraduate student expectations and grading:

All students are expected to accomplish the following:

- (a) Attend all lectures, literature discussion groups, labs and exams on time There will be no make-up for missed classes and half credit for late attendance. Good reasons for missing the classes will be accepted if cleared with the instructor before the class. (10 points for each for 30 sessions, 300 total points).
- (b) Give a 30-minute oral presentation (including discussion) of a literature review of a topic of interest related to Arctic vegetation. Guidelines for the presentations and grading criteria for the presentations will be handed out early in the semester. (200 points).
- (c) Attend the 3-day snow ecology field trip, describe 3 snow pits and keep field book of observations (100 points).
- (d) Do the readings, study the on-line material including lecture slides and complete final lecture exam (200 points).

- (e) Learn 160 Arctic plant species and take the exam (200 points).

Graduate student expectations and grading:

Graduate students will be graded according to the same criteria as the undergraduate students except for the following:

- (f) Act as Moderator for at least one literature discussion sessions. This will involve thorough reading of the papers to actively lead the discussion and act as moderator for the session (50 points for each session).
- (g) Present at least one paper during the literature discussion sessions. These presentations can include slides of key figures and major discussion points. Presenters are encouraged to also bring other literature to bear on the topic. These overviews should focus on the principal points of the paper and major concepts and should be presented as if in a national conference (100 points).
- (h) Write a 2000-3000-word research paper on an Arctic Vegetation topic of your choice. This paper should have at least 10 literature citations and can include additional tables and figures. This can be the same topic as that of your oral presentation. Late papers will receive a deduction of 15 points of the 200 total for every day late and no credit beyond 3 days late. Students should arrange for an incomplete grade if they cannot meet this deadline (200 points).

10. Support Services:

Students are encouraged to contact the instructor with any questions, or to clarify the lecture or the assignments. I will be happy to review drafts of assignments and answer