

FORMAT 2

Submit originals (including syllabus) and one copy and electronic copy to the **Faculty Senate Office**
 See <http://www.uaf.edu/uafgov/faculty-senate/curriculum/course-degree-procedures/> for a complete description of the rules governing curriculum & course changes.

CHANGE COURSE (MAJOR) and DROP COURSE PROPOSAL
Attach a syllabus, except if dropping a course.

SUBMITTED BY:			
Department	Biology & Wildlife	College/ School	CNSM
Prepared by	Sydonia Bret-Harte	Phone	474-5434
Email Contact	msbretharte@alaska.edu	Faculty Contact	Sydonia Bret-Harte
1. COURSE IDENTIFICATION: As the course now exists.			
Dept	BIOL	Course #	334W
		No. of Credits	4
COURSE TITLE	Structure and Function of Vascular Plants		
2. ACTION DESIRED: Changes to be made to the existing course.			
CHANGE COURSE			x
DROP COURSE			
NUMBER			x
TITLE			
DESCRIPTION			x
PREREQUISITES			x
FREQUENCY OF OFFERING			
CREDITS (including credit distribution)			
COURSE CLASSIFICATION			
CROSS LISTED			
<i>Dept. (Requires approval of both departments and deans involved. Add lines at end of form for such signatures.)</i>			
STACKED (400/600) Include syllabi.			
Dept. and Course #			
OTHER (please specify)			

RECEIVED
 SEP 20 2012

Dean's Office
 College of Natural Science & Mathematics

3. 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 and the appropriate Faculty Senate curriculum committee. Furthermore, any core course compressed to less than six weeks must be approved by the core review committee.

Governance
 10/3/12 HLP

Leah Berner
 9/21/12 TLP

COURSE FORMAT: (check all that apply)	1	2	3	4	5	6 weeks to full semester
OTHER FORMAT (specify all that apply)						
Mode of delivery (specify lecture, field trips, labs, etc)		lecture and laboratory				

4. COURSE CLASSIFICATIONS: (undergraduate courses only. Use approved criteria found on Page 10 & 17 of the manual. If justification is needed, attach on separate sheet.)

H = Humanities	S = Social Sciences	
Will this course be used to fulfill a requirement for the baccalaureate core?		YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>
IF YES, check which core requirements it could be used to fulfill:		
O = Oral Intensive, Format 6 also submitted	W = Writing Intensive, Format 7 submitted	Natural Science, Format 8 submitted <input checked="" type="checkbox"/>

5. COURSE REPEATABILITY:

Is this course repeatable for credit?	YES		NO	<input checked="" type="checkbox"/>
Justification: Indicate why the course can be repeated (for example, the course follows a different theme each time).				
How many times may the course be repeated for credit?				TIMES
If the course can be repeated with variable credit, what is the maximum number of credit hours that may be earned for this course?				CREDITS

6. CURRENT CATALOG DESCRIPTION AS IT APPEARS IN THE CATALOG: including dept., number, title and credits

BIOL F334 W Structure and Function in Vascular Plants (n)
4 Credits Offered Spring Odd-numbered Years
Morphology, anatomy and physiology of vascular plants, stressing the interrelationships between development, anatomy, growth, water relations, photosynthesis, transport and metabolism. **Prerequisites: BIOL F239; ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor.** (3+3)

7. COMPLETE CATALOG DESCRIPTION AS IT WILL APPEAR WITH THESE CHANGES:

(Underline new wording strike-through old wording and use complete catalog format including dept., number, title, credits and cross-listed and stacked.) PLEASE SUBMIT NEW COURSE SYLLABUS. For stacked courses the syllabus must clearly indicate differences in required work and evaluation for students at different levels.

BIOL F4xx W Structure and Function in Vascular Plants (n)
4 Credits Offered Spring Odd-numbered Years
 Morphology, anatomy and physiology of vascular plants, stressing the interrelationships between development, anatomy, growth, water relations, photosynthesis, transport and metabolism. This course satisfies capstone project degree requirements in the Biological Sciences. **Prerequisites:** ~~BIOLF239~~; **BIOL F115X/F116X; MATH F107 or higher; STAT200X; ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor.** (3+3)

8. IS THIS COURSE CURRENTLY CROSS-LISTED?

YES/NO	No	If Yes, DEPT	NUMBER

(Requires written notification of each department and dean involved. Attach a copy of written notification.)

9. GRADING SYSTEM: Specify only one

LETTER:	<input checked="" type="checkbox"/>	PASS/FAIL:	<input type="checkbox"/>
---------	-------------------------------------	------------	--------------------------

10. ESTIMATED IMPACT

WHAT IMPACT, IF ANY, WILL THIS HAVE ON BUDGET, FACILITIES/SPACE, FACULTY, ETC.

Little or no impact on budget, facilities, or faculty workloads, because the instructor is already teaching the course.

11. LIBRARY COLLECTIONS

Have you contacted the library collection development officer (kljensen@alaska.edu, 474-6695) with regard to the adequacy of library/media collections, equipment, and services available for the proposed course? If so, give date of contact and resolution. If not, explain why not.

No	<input checked="" type="checkbox"/>	Yes	Library resources are already in place for this class, as it has been taught as Biol. 334 for several years. No significant changes to library collections are expected with the changes given here.
----	-------------------------------------	-----	--

12. IMPACTS ON PROGRAMS/DEPTS:

What programs/departments will be affected by this proposed action?
 Include information on the Programs/Departments contacted (e.g., email, memo)

The change is not expected to impact programs or departments outside Biological Sciences.

13. POSITIVE AND NEGATIVE IMPACTS

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

There will be minimal impacts on other courses in Biological Sciences because the course is already being taught and course delivery is not expected to change (see justification below). Positive impacts are that the course will become more accessible to graduate students, and will assist the Department in offering a capstone experience to majors in the Biological Sciences (see justification).

JUSTIFICATION FOR ACTION REQUESTED


The purpose of the department and campus-wide curriculum committees is to scrutinize course change and new course applications to make sure that the quality of UAF education is not lowered as a result of the proposed change. Please address this in your response. This section needs to be self-explanatory. If you ask for a change in # of credits, explain why; are you increasing the amount of material covered in the class? If you drop a prerequisite, is it because the material is covered elsewhere? If course is changing to stacked (400/600), explain higher level of effort and performance required on part of students earning graduate credit. Use as much space as needed to fully justify the proposed change and explain what has been done to ensure that the quality of the course is not compromised as a result.


This change is part of a larger set of revision to the Biological Sciences B.A. and B.S. curricula. Both degrees will now require students to complete a capstone project for graduation. The capstone project is a research project that must be chosen and completed by the student and presented in written form. BIOL 334W (to become BIOL 4xxW) will become one of several courses that satisfy the capstone requirement. The course already requires a research project to be proposed, conducted, and written up by the student, so there will be minimal changes to course delivery. The revised catalog description will help student to identify courses that meet the capstone requirement. The prerequisite for BIOL F239, Introduction to Plant Biology, will be dropped in order to make BIOL 334W accessible to more biology students. (BIOL F239 is not a required course for Biological Sciences majors.) In the past, the prerequisite was frequently waived, and is not necessary for a student to succeed in the course. The course will add BIOL F115X and F116X, Fundamentals of Biology I and II, as prerequisites, because these were prerequisites for BIOL F239 and are necessary for the course. The course will add MATH F107X or higher and STAT F200X as prerequisites because quantitative skills are necessary for the problem sets, and some statistical background is necessary for students to succeed in analyzing the data they collect in their independent projects. The course will be changed from 300-level to 400-level in order to make the course more accessible to graduate students. In the past three years, several graduate students have taken the course, but could not receive graduate credit for it.

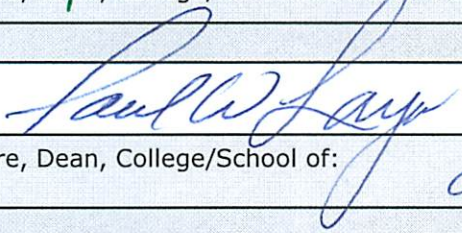
Additional justification furnished via email tof 1/8/2013:

"The course as I teach it requires strong quantitative skills as well as analytical and writing skills, and is already taught at a level appropriate for a 400 level course, since it requires students to build on the knowledge they have already acquired in lower level biology courses (as well as chemistry and physics) to understand the physiological, physical and chemical basis of plant function. I inherited the course from another instructor who focused more on morphology than on physiology, and have been told that I am already teaching it at the 400 level. Having the course become a capstone project course will require the students to demonstrate strong analytical skills in the development and completion of their independent projects. My chair, Christa Mulder, agrees that it is appropriate to list it at the 400 level."

APPROVALS: (Additional signature blocks may be added as necessary.)

	Date	7/17/2012
Signature, Chair, Program/Department of: <i>Biology and Wildlife</i>		

	Date	9/26/2012
Signature, Chair, College/School Curriculum Council for: <i>CNSM</i>		

	Date	10/1/12
Signature, Dean, College/School of: <i>CNSM</i>		

	Date	
Signature of Provost (if applicable)		

Offerings above the level of approved programs must be approved in advance by the Provost.

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

	Date	
Signature, Chair, UAF Faculty Senate Curriculum Review Committee		

ADDITIONAL SIGNATURES: (As needed for cross-listing and/or stacking)

	Date	
Signature, Chair, Program/Department of:		

	Date	
Signature, Chair, College/School Curriculum Council for:		

	Date	
Signature, Dean, College/School of:		

Syllabus – Biology 4xxW, Structure and Function in Vascular Plants – Spring 2013

Morphology, anatomy, and physiology of vascular plants, stressing the interrelationships between development, growth, water relations, photosynthesis, transport, and metabolism. This course satisfies capstone project degree requirements in the Biological Sciences. 4 credits (3 + 3). Prerequisites: BIOL F115X/F116X; MATH 107X or higher; STAT 200X; ENGL F111X, and ENGL F211X or ENGL F213X, or permission of instructor.

Completing this course will meet the Capstone Project requirement for the Department of Biology and Wildlife

Lectures: MWF 10:30-11:30 am, IRV 208

Lab: M 2:15-5:15 pm, IRV 207

Instructor: Dr. Sydonia Bret-Harte – msbretharte@alaska.edu

Office: 122 Arctic Health Research Building

Mailbox: 311 Irving I

Office hours: W 11:30 – 1 pm or by appointment

Phone: 5434

Teaching Assistant: TBD

Required Text: *Plant Physiology, 5th Edition* (2010), by L Taiz and E. Zeiger, Sinauer Associates, publisher. The textbook publisher maintains on-line learning resources at <http://www.plantphys.net/>. There is a copy of the textbook on 2-hour reserve in the BioSciences Library in the Arctic Health Research Building. Some course materials, including this syllabus and lecture outlines, will be posted online on Blackboard.

Additional Useful Texts:

Plant Physiological Ecology, 2nd edition, by H Lambers, FS Chapin III, and TL Pons, Springer, publisher

Physicochemical and Environmental Plant Physiology, 4th edition, by PS Nobel, Elsevier Academic Press, publisher

Physiological Plant Ecology, 3rd edition, by W Larcher, Springer, publisher

These books are available in the library.

Course goals and student learning outcomes: The overall goal of this course is to provide an understanding of how plants function as whole organisms, and the relationships between their structure, function, and the environments in which they live. At the end of the course, I hope that you will understand how plants are intimately connected to their environments and how they function in an integrated way. I hope that you will understand the quantitative principles that underlie much of how plants function, achieve mastery of the concepts presented in the course and improve your ability to formulate hypotheses, conduct experiments, and write scientific reports.

Instructional Methods: This course is based on lectures, laboratory exercises, and discussion sections. Lectures cover the major topics, emphasizing and discussing the important points.

Discussion sections help you figure out how to approach the problem sets, and give you a chance to clarify anything that you don't understand from lecture. The problem sets help you understand how to apply the physical and quantitative principles that underlie how plants function. Laboratory exercises help you learn how to measure and identify plant structure and function in a hands-on way. In the laboratory you will also develop and carry out your own research project in plant physiology, and present and write-up your findings. Writing up the laboratory reports and your independent research project helps you improve your ability to write scientific reports. Your personal participation in lectures, discussion sections, and laboratory exercises is both important and required, and will help you learn the material of the course.

Grading and class policies:

1. Points will be awarded for performance on lecture and laboratory exercises.
2. Grades will be based on percentage of total possible points according to the following scale. UAF has instituted a +/- scale for the grades, as noted below.

A	90-100% (A- = 90-92%, A+ = 97-100%)
B	80-89% (B- = 80-82%, B+ = 87-89%)
C	70-79% (C- = 70-72%, C+ = 77-79%)
D	60-69% (D- = 60-62%, D+ = 67-69%)
F	0-60%

3. Lecture and laboratory exercises:

Points	Activity	Date due
200	Two mid-term exams, one hour each	Feb 23, Apr 6
200	Final exam, two hours	May 9
200	Eight problem sets	As specified in calendar
125	2 short lab reports, lab notebook, lab quizzes & miscellaneous assignments	As specified in calendar & class
25	Ungraded diagnostic writing assignment	Jan 24
25	Proposal for independent lab project	Feb 25
50	Draft of Introduction & Methods	Apr 8
50	Draft of Results & Discussion	Apr 22
25	Oral presentation of independent lab project	Apr 25
100	Final Independent Lab Project Report	May 4

A significant part of each exam will involve written essays, and more than 50% of the total grade is based on written materials. Exam scores may be graded on a curve, in which case the scale above will be adjusted. Due dates and the course schedule may change. If so, an announcement will be made in class.

4. Attendance and punctuality at lecture and lab are expected. If you are consistently late to class, points will be deducted from your score. All electronic devices, except computers used for taking notes and presentations, should be turned off and put away before class starts. You are responsible for all materials, information, handouts, announcements and assignments made orally, electronically or in writing.

5. If you are going to miss an exam, it is essential that you contact Dr. Bret-Harte as soon as possible to discuss the reasons. Unexcused absences from exams will be recorded as a zero.
6. If you are going to miss lab, you must contact the Teaching Assistant as soon as possible to make arrangements for making up the exercises you will miss. You are responsible for mastering the material and completing assignments from a missed lab. Unexcused absences from lab will be recorded as a zero.
7. Late assignments and problem sets will lose 10% for each day that they are late, unless an arrangement is made with Dr. Bret-Harte in advance.
8. Academic Integrity – the UAF Student Code of Conduct is presented on page 49-50 of the 2010-2011 Course Catalog. No collaboration among students is allowed on exams or quizzes, and although students may work together in collecting, analyzing, and interpreting data from laboratory exercises, no collaboration is permitted in writing of lab reports, lab assignments, or problem sets. Copying or paraphrasing another student's writing is a violation of the Code of Conduct. If in doubt about whether you should cite or acknowledge someone, do so. If you are unsure of how to cite someone's writings or ideas, ask the instructor or teaching assistant for help. Reference librarians are also a good source of information for help with citations. Violations of the Code of Conduct may result in an F for the course and/or referral to the university disciplinary committee.
9. You are encouraged to seek whatever assistance you may need from the instructor and teaching assistant to successfully complete course requirements. Please come to office hours, send e-mails, and leave phone messages. You have a better chance of improving your grade earlier, rather than later. We are happy to review and comment on draft papers and to offer suggestions for preparing presentations. You can also take your drafts to the Writing Center (call 5314 for an appointment) for help with organization, presentation and clarity.
10. The Office of Disability Services implements the Americans with Disabilities Act (ADA) and ensures that UAF students have equal access to the campus and course materials. I will work with the Office of Disability Services (208 Whittaker; 474-5655) to provide reasonable accommodation to students with disabilities. Please talk to me at the beginning of the semester if you need help or special accommodations of any kind.

Course Schedule (subject to change)

Date	Topic	Reading
January		
21	F Introduction: overview of plant structure and overall plant growth	ch. 1, App. 2
24	M Overall growth and photosynthetic energy capture Lab 1: Plant morphology <i>ungraded diagnostic writing assignment due</i>	ch. 7, pp. 164-87; App. 1
26	W Photosynthetic energy capture	ch. 7, pp. 164-96
28	F Discussion: <i>overall growth problem set</i>	
31	M Photosynthetic energy capture II Lab 2: Plant growth analysis	
February		
2	W Physiology of photosynthesis I <i>Overall growth problem set due</i>	ch. 8, pp. 200-25
4	F Discussion: <i>photosynthesis problem set</i>	
7	M Physiology of photosynthesis II Lab 3: Discussion of independent projects, Photosynthesis I	ch. 9, pp. 243-54, 263-65
9	W Physiology of photosynthesis III <i>Photosynthesis problem set due</i>	ch. 9, pp. 257-62
11	F Photosynthetic gas exchange <i>Report due for lab 2: growth analysis</i>	ch. 4, pp. 96-102
14	M Water cost of photosynthesis Lab 4: Photosynthetic gas exchange & pigment extraction	
16	W Leaf energy balance and temperature	ch. 9, pp. 254-56
18	F Discussion: <i>leaf function problem set</i> <i>Lab notebooks due</i>	
21	M Stomatal control and responses Lab 5: Transpiration and control of stomatal function	ch. 18, pp. 524-31
23	W <i>First mid-term exam</i>	
25	F Water potential, cell osmotic relations <i>Independent Project Proposal due; leaf function problem set due</i>	ch. 3, pp. 67-83
28	M Water transport I Lab 6: Water potential; Plant Anatomy I	ch. 4
March		
2	W Water transport II	ch. 4
4	F Discussion: <i>water potential problem set</i>	
7	M Water transport III Lab 7: Plant anatomy II	ch. 4
9	W Water uptake by roots <i>Water potential problem set due</i>	ch. 4, pp. 87-90
11	F Discussion: <i>water transport problem set</i>	
14-18	<i>Spring break</i>	
21	M Photosynthate translocation Lab 8: Plant anatomy III	ch. 10

23	W	Photosynthate translocation II <i>Water transport problem set due</i>	ch. 10
25	F	Discussion: <i>Translocation problem set</i>	
28	M	Mineral nutrition Lab 9: mineral deficiency experiment set-up; individual projects	ch. 5
30	W	Mineral Nutrition II <i>Translocation problem set due</i>	ch. 5
April			
1	F	Toxic minerals, Ion uptake by cells <i>Lab notebooks due</i>	ch. 5, ch. 6
4	M	Ion transport I Lab 10: score mineral deficiency experiment; individual projects	ch. 6, App. 1
6	W	<i>Mid-term exam II</i>	
8	F	Discussion: <i>ion transport problem set</i> <i>Draft of Independent Project Introduction and Methods due</i>	
11	M	Ion transport II Lab 11: harvest mineral deficiency experiment; individual projects	ch. 6
13	W	Plant respiration <i>Ion transport problem set due</i>	ch. 11, pp. 305-31
15	F	Discussion: <i>growth and respiration problem set</i>	
18	M	Cell walls and growth of plant cells Lab 12: Data analysis for individual projects <i>Report due for labs 9&10: mineral deficiency experiment</i>	ch. 15
20	W	Controls over cellular growth rate <i>Growth and respiration problem set due</i>	ch. 15
22	F	Plant hormone classes and actions <i>Draft of Independent Project Results and Discussion due</i>	ch. 19-24*
25	M	Plant hormones II Lab 13: <i>Oral presentations on independent projects</i>	ch. 19-24*
27	W	Phytochrome and light responses	chs. 17, 18
29	F	<i>UAF Springfest; no class</i>	
May			
2	M	Cold and freeze tolerance Lab 14: Field trip	ch. 26
4	W	Cold and freeze tolerance II <i>Final Independent Project Report due</i>	ch. 26
6	F	Review <i>Lab notebooks due</i>	
9	M	<i>Final exam, 10:15-12:15</i>	

Additional readings and supplementary handouts will be assigned in class.

**There is a lot of material in these chapters, and we won't cover everything. Read these chapters selectively, to help you understand anything that is not clear from the lectures.*