

BIOL 418 FOREST ECOLOGY

Spring 2024

Tues, Wed, Fri: 10:30 am – 11:20 pm
Cunningham Building (CUNN) Rm. 146

INSTRUCTORS: Dr. Barbara J. Hawkins & Dr. Paul de la Bastide
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Office hours by arrangement – please email us to arrange. We'd love to chat!

TEACHING ASSISTANT: Lise Nehring
Labs: Wednesdays, 11:30 am-2:20 pm & 2:30-5:30 pm

COURSE OBJECTIVES: To explore the structure and function of forest ecosystems at the tree, stand and landscape scale, including: effects of the abiotic and biotic environment upon plant abundance, distribution and diversity; nutrient, carbon and water cycles; population and community ecology; disturbance; forest management and conservation; and climate change. The focus will be on forests of British Columbia, but Canadian and global forest ecosystems are discussed.

INTENDED LEARNING OUTCOMES: By the end of the course, students should be able to think, write and speak effectively about:

- the structure and function of forest ecosystems locally, nationally and globally;
- forest soil properties and processes, hydrology, and water quality;
- biogeochemical, nutrient, carbon and water cycles in forests;
- ecological concepts and principles including forest plant and animal communities, population dynamics, competition, disturbance and succession;
- the effects of climate, moisture, nutrients, genetics, fire, insects and diseases on tree physiology and forest health and productivity;
- the biogeoclimatic classification system of B.C.;
- the practice of vegetation surveys.

COURSE READINGS: There is no textbook for this course. Course readings for specific lectures will be posted on Brightspace.

LAB MANUAL: Lab materials will be posted weekly on Brightspace

COURSE FORMAT: Drs. Hawkins and de la Bastide will alternate responsibility for different sections of the course as indicated in the course outline. The slides for each lecture will be made available in advance on the course *Brightspace* site. The lectures will NOT be recorded, thus it is strongly recommended that students attend lectures and take notes. All exams will be based on lecture material, and readings will help reinforce the concepts. Lise Nehring will coordinate the labs.

LABS: Labs begin on Wednesday, January 17th, 2024. There are two lab sections (B01 – Wed 11:30-2:30 and B02 - Wed, 2:30-5:30). Please attend only the lab section in which you are registered. Most labs will take the entire three hours and many are outdoors, so come prepared with appropriate clothing, rainwear and footwear. Lab material and assignments will be posted the day before your lab.

The laboratory portion of the course is worth 30% of your final grade. If you miss more than three labs for any reason, even with a medical excuse, you will receive a failing grade (F) in the course.

EVALUATION:	Two midterms (15% each)	30%
	Final examination (cumulative)	40% (required)
	Lab	30% (required)

There will be no deferred or supplemental midterm or lab exams. If you miss one midterm, the evaluation breakdown will be adjusted accordingly. If you miss two midterms, the second missed midterm will be given a mark of zero (0). Deferred final exams will only be considered if a formal Request for Academic Concession is provided.

GRADE CONVERSION: A+ 90-100%; A 85-89.5%; A- 80-84.5%; B+ 77-79.5%; B 73-76.5%; B- 70-72.5%; C+ 65-69.5%; C 60-64.5% D 50-59.5%; F <49.5;
N Failure to complete the lab requirements or the final exam will result in a grade of "N" regardless of the cumulative percentage on other elements of the course. N is a failing grade and factors into GPA as a value of 0.

PROPOSED COURSE OUTLINE - 2024

Date	Lecture Topics		Lab topics (weekly)
Jan 9 10 12	Introduction to the course, history of forest ecology Subdisciplines of forest ecology Introduction to forest ecosystems	BH	No lab
16 17 19	Forest ecosystems – global to local: Global forest biomes, forest regions of Canada, forest zones of B.C., the BEC system	PB	BC forests; forest classification and variation
23 24 26	Primary productivity – transfer and storage of energy: Sources of energy, trophic chains, food webs, ecological pyramids, energy & carbon flow, production ecology	BH	Paper discussion
30 31	Biogeochemical cycling & nutrition: Geochemical, biogeochemical, biochemical cycles, N cycling	PB	Methods of forest community sampling
Feb 2	Feb 2 – Midterm I		
6 7 9 13 14 16	Physiography & soils: Elevation, slope, soil physical and chemical properties, soil microbes and fauna Forest soil bacterial communities – <i>Guest lecture Dr. R. Roy</i> Mycorrhizal ecology – <i>Guest lecture Dr. JM Kranabetter</i> Ecological roles of light, temperature and water “	PB BH	Begin forest community sampling Paper discussion
19-23	Reading Break- no lectures or labs		
27 28	Ecological roles of light, temperature and water “	BH	Sampling forest communities
Mar 1	Forest succession and gap dynamics		
5 6 8	Acclimation, adaptation and evolution – forest variation Assisted migration – <i>Guest lecture Dr. M Vance</i> Mar 8 – Midterm II	BH	Sampling forest communities
12 13 15	Population & community ecology “ Sustainability of forest ecosystems – natural disturbance	BH	Sampling forest communities
19 20 22	Wind, fire, insects, pathogens, fauna and their effects on forest community composition, productivity Sustainability – climate change	PB	Lab report question drop-in
26 27 29	Emerging diseases (pine beetle, yellow cedar), taiga advance Sustainability – resource management (flora & fauna) University closed	PB	Lab report due
Apr 2 3 5	Invasive species, historical and current Retention forestry – <i>Guest lecture – Dr. JM Kranabetter</i> Ecological resilience	PB	

Academic Policies and Regulations:

[Undergraduate policies and academic regulations](#) are described in the UVic Undergraduate Calendar. Please read very carefully the Policy on Academic Integrity, the Academic Concession Regulation/Guidelines, and Academic Important dates.

Academic Integrity: Students are required to abide by all academic regulations set as set out in the [University calendar](#), including standards of academic integrity. Violations of academic integrity (e.g. cheating and plagiarism) are considered serious and may result in significant penalties. The exams (quizzes, midterms and final exam) must all be completed **individually** and not with a friend or classmate or a group. You are prohibited from sharing any information about the exam with others.

Academic Concession Regulation/Guidelines:

Please refer to the links below when determining what is a 'valid reason' to request an Academic Concession and the process for requesting a concession.

[Academic Concessions Regulation](#) and [Academic Concession Guidelines](#)

Academic Important Dates:

Check [here](#). It is the student's responsibility to attend to Add/Drop dates published in the Calendar (last day to add courses – Jan 24, last day to drop without failure – Feb 29). Students must not assume they will be dropped automatically from any course they do not attend. It is also the students' responsibility to check their records and registration status.

UVic Services:

Centre for Accessible Learning - The CAL staff are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations for those with accommodation letters.

<https://www.uvic.ca/accessible-learning/index.php>

Counselling Services - Counselling Services can help you make the most of your university experience. They offer free professional, confidential, inclusive support to currently registered UVic students. <https://www.uvic.ca/services/counselling/>

Elders' in Residence - The Office of Indigenous Academic and Community Engagement (IACE) has the privilege of assembling a group of Elders from local communities to guide students and others in Indigenous ways of knowing and being. <https://www.uvic.ca/services/indigenous/students/programming/elders/index.php>

Health Services - University Health Services (UHS) provides a full service, primary health clinic for students, and coordinates healthy student and campus initiatives. <http://www.uvic.ca/services/health/>

Mental Health Supports - In addition to providing both face to face and online mental health resources through the Student Wellness Centre, a 24x7 phone & online student mental health resource and support program is available for all UVic students, no matter where they are located, at any time. <https://www.uvic.ca/services/counselling/resources/supportconnect/>

Student Support for Online Technology

Learn Anywhere: <https://onlineacademiccommunity.uvic.ca/LearnAnywhere/>

Sexualized Violence Prevention and Response - UVic takes sexualized violence seriously. We encourage students to learn more about how the university defines sexualized violence and its overall approach by visiting www.uvic.ca/svp. If you or someone you know has been impacted by sexualized violence and needs information, advice, and/or support please contact the sexualized violence resource office in Equity and Human Rights (EQHR). If you want to take part in the important prevention work taking place on campus, you can also contact the sexualized violence resource office in EQHR; Sedgewick C119, Phone: [250.721.8021](tel:250.721.8021), Email: svpcoordinator@uvic.ca