WEED SCIENCE

APBI 328- Fall 2024 Syllabus

ACKNOWLEDGEMENT

UBC's Point Grey Campus is located on the traditional, ancestral, and unceded territory of the xwməθkwəy̓əm (Musqueam) people. The land it is situated on has always been a place of learning for the Musqueam people, who for millennia have passed on in their culture, history, and traditions from one generation to the next on this site.

COURSE INFORMATION

Course Title	Course Code Number	Credit Value
Weed Science	APBI 328	4

CONTACTS

Course Instructor	Contact Details	Office Location	Office Hours
Vanessa Jones	Contact by email at: vjones97@mail.ubc.ca Or via **canvas message.** I will respond within working hours 9am-4pm Monday to Friday. Emails received outside of working hours will be responded to during work hours following receipt of message.	FSC 2413	Wednesdays 12-1pm Virtual office hours will also be available by appointment. Please email me if you would like an appointment and meetings will be set up on Zoom.

COURSE STRUCTURE

Our class will be a combination of in-person lecture-based learning, problem-based learning, group discussion, guest lectures, and lab work. On Wednesdays and Fridays we will meet in-person from 2:00-3:30pm. Our lab, which will be on Mondays, will be in-person and will be a combination of individual and group work. Please consult the course and lab schedules for detailed information.

The success of an in-person course such as this relies on your attendance, positive participation, and careful attention to the syllabus. It is my hope that this learning format provides you with an enriching learning experience that creates a great community for learning.

Schedule:
Lectures: **Wednesdays & Fridays 2:00-3:30pm, CEME 1215**

Laboratory: **Section L01- Mondays 12:00pm-1:30pm, MacLeod 2014**
Section L02- Mondays 1:30pm-3:00pm, MacLeod 2014

LATE POLICY

Projects and assignments are expected to be submitted **on time by the assigned deadline**. If you require an adjusted deadline for extenuating circumstances, please communicate with me well in advance of the deadline. If you have a letter of accommodation from the office of accessibility, you must discuss this with me **at the beginning of the term.** Late assignments will otherwise be penalized 5 points per day late. Missed assignments will be given a 0.

SCHEDULE OF TOPICS

Date	Topic
Sept. 4	Introduction to course, weeds, and weed science; classification of weeds What is a weed anyway?
Sept. 6	Harmful and beneficial aspects of weeds What's the problem? Impacts of invasion (Human health, economic, ecological)
Sept. 11	Establishment, persistence, reproduction and dissemination of weeds Is there a weed problem and how do we know?
Sept. 13	Weed-crop interactions- Predicting weed invasions, yield losses and experimental design-weed-crop interaction studies.
Sept. 18	Introduction to methods of weed control: prevention, control, and eradication of weeds

Sept. 20	Mechanical control of weeds and cultural weed control Non-living mulches and thermal weed control Cover crops and weed control; Allelopathy and its potential uses
Sept. 25	Choosing weed control
Sept. 27	Biological control of weeds- Classical Mycoherbicides
Oct. 2	Biocontrol case studies. Biocontrol agents: problem solvers or problem makers?
Oct. 4	Weedy controversy: Chemical weed control history PART ONE
Oct. 9	Weedy controversy: Chemical weed control history PART TWO Class discussion
Oct. 11	Chemical control: classification of herbicides, herbicide metabolism, and fates of herbicide in soil
Oct. 16	Midterm (in class)
Oct. 18	Herbicide uptake, translocation, and selectivity
Oct. 23	Herbicide Groups: Inhibitors of mitosis and cell growth/Inhibitors of photosynthesis and amino acid metabolism Growth Regulator-type herbicides Inhibitors of photosynthesis and amino acid metabolism
Oct. 25	Herbicide resistance and Herbicide CSI: Group Activity
Oct. 30	Integrated Pest Management and its applications Applying Integrated Pest Management in Weed Decision-Making
Nov. 1	Guest Lecturer – David Clements, Weed Scientist at Trinity Western University

Nov. 6	Hybridization of Species Evolution of species
Nov. 8	Hybridization and Community Evolution
Nov. 13	Midterm Break
Nov. 15	Guest Lecture - Virginia Oeggerli: Vegetation Growth Trajectory Responses of Native and Invasive Plants within the McKay Creek Wildfire Area
Nov. 20	Guest Lecture – Jichul Bae, Weed Scientist at Agriculture and Agri-Food Canada
Nov. 22	Weed biology- Terrestrial and Aquatic invasive plants in British Columbia
Nov. 27	Orchard/Fruit Production Weed Control Sustainable weed management in vegetable production
Nov. 29	Weeds and Climate Change
Dec. 4	Weeds and Microbiomes Poisonous Weeds
Dec. 6	Final Exam Review

LEARNING OUTCOMES

Learning outcomes for this course include:

- Understanding basic weed biology including reproductive and dissemination strategiesof weeds
- Learning and applying the principles of Integrated Pest Management (IPM) to manage weeds in a variety of contexts (agriculture, forestry, natural areas)
- Learning prevention and management (mechanical, biological and chemical weedcontrol) strategies of weeds
- Familiarization with priority invasive plants in the province of British Columbia
- Understanding the impacts of climate change on weed biology and the potential impactsto agriculture and the environment.
- Weed identification skills including field skills (surveying and mapping)

We will be using Problem-based learning (PBL) to practice putting your new knowledge and skills into action. PBL cases will be based on real and current issues in weed management that you will be helping to find solutions for. We will be working hard to create real world opportunities for you to learn, practice applying your knowledge, and develop your “weed-related” problem solving skills.

LEARNING MATERIALS

There is no required textbook for this course. Required learning/reading materials for this course will be provided in the weekly Canvas modules. These will include links to relevant papers, book chapters, and videos that support your learning. A Virtual Lab Manual will be provided for the laboratory. This will be available on Canvas on the Lab Page.

ASSESSMENTS OF LEARNING

Distribution of Marks

Lab Assignments:	**35**
Laboratory Plant Collection/Mapping Project	10
Weed Seed Bank Assignment	5
Problem-based Learning Report	15
Final Lab Presentation	5
Class Assignments:	**65**
Midterm exam	20
Weed Species Literature Review and Fact Sheet Project	15
Class participation	10
Final exam	20
Total	**100**

UNIVERSITY POLICIES

Policies and Resources to Support Student Success

UBC provides resources to support student learning and to maintain healthy lifestyles but recognizes that sometimes crises arise and so there are additional resources to access including those for survivors of sexual violence. UBC values respect for the person and ideas of all members of the academic community. Harassment and discrimination are not tolerated nor is suppression of academic freedom. UBC provides appropriate accommodation for students with disabilities and for religious observances. UBC values academic honesty and students are expected to acknowledge the ideas generated by others and to uphold the highest academic standards in all of their actions.

Details of the policies and how to access support are available on **the UBC Senate website.**

Statement regarding online learning for international students during the COVID pandemic

During this pandemic, the shift to online learning has greatly altered teaching and studying at UBC, including changes to health and safety considerations. Keep in mind that some UBC courses might cover topics that are censored or considered illegal by non-Canadian governments. This may include, but isnot limited to, human rights, representative government, defamation, obscenity, gender or sexuality, and

historical or current geopolitical controversies. If you are a student living abroad, you will be subject to the laws of your local jurisdiction, and your local authorities might limit your access to course material or take punitive action against you. UBC is strongly committed to academic freedom, but has no control over foreign authorities (please visit http://www.calendar.ubc.ca/vancouver/index.cfm?tree=3,33,86,0 for an articulation of the values of the University conveyed in the Senate Statement on Academic Freedom). Thus, we recognize that students will have legitimate reason to exercise caution in studying certain subjects. If you have concerns regarding your personal situation, consider postponing taking a course with manifest risks, until you are back on campus or reach out to your academic advisor to find substitute courses. For further information and support, please visit: http://academic.ubc.ca/supportresources/freedom-expression.

Academic Integrity

See UBC policy on academic integrity here: https://academicintegrity.ubc.ca/regulation-process/academic-misconduct/

Students are permitted to use artificial intelligence tools, including generative AI, to gather information, review concepts or to help produce assignments. However, students are ultimately accountable for the work they submit, and any content generated or supported by an artificial intelligence tool must be cited appropriately. Use of AI tools is not permitted during midterm exams and final exams in this course.

LEARNING ANALYTICS

Learning analytics includes the collection and analysis of data about learners to improve teaching and learning. This course will be using the following learning technologies: Canvas and Padlet. Many of these tools capture data about your activity and provide information that can be used to improve the quality of teaching and learning. In this course, I plan to use analytics data to:

- View overall class progress
- Track your progress in order to provide you with personalized feedback
- Review statistics on course content being accessed to support improvements in the course
- Track participation in discussion forums
- Assess your participation in the course

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Students may record classes for personal use only and may not post recordings on social media or share them on any other web-based platform. Please note that all of our course Zoom sessions (lecture and lab) will be recorded for your reference and will be able to be accessed via the Zoom link on Canvas.