PLSC 221 / BIOL 210

Introduction to Plant Science / Introduction to Northern Botany

In Fall 2022, BIOL210 *Introduction to Northern Botany*, is being offered at Yukon University concurrent with the University of Alberta's PLSC 221, *Introduction to Plant Science*, as part of the Northern Environmental and Conservation Sciences, B.Sc. Program. All students registered in BIOL 210 or PLSC 221 must adhere to requirements outlined in this course syllabus. University of Alberta students must also be aware of, and adhere to, the University's Code of Student Behaviour, referenced in the outline; Yukon University students must be aware of, and adhere to, Yukon University's Academic Regulations, also referenced in the outline.

INSTRUCTOR: Krystal Isbister, sessional instructor, School of Science

OFFICE HOURS: By appointment

OFFICE LOCATION: Northern Systems Conservation Co-Lab, Yukon Research Centre

TELEPHONE/E-MAIL: (867)334-4890/kisbister@yukonu.ca

CLASS DAYS & TIMES: Lectures: Tuesday/Thursday 10:30 -11:50 AM Yukon Time
Labs: Wednesday 1:00 – 3:50 PM Yukon Time

CLASS LOCATION: Lectures: A2601
Labs: A2805 (Biology Lab)

COURSE DESCRIPTION

This course provides an introduction to plant biology, with an emphasis on the taxonomy of common Boreal and Arctic plant families found in the Yukon. Students will learn tools and techniques used for the identification of plants, including the use of plant keys. Students will become familiar with the anatomy and general biological functions of vascular plants. Lectures will also cover topics relevant to the evolution, systematics, ecology, biogeography, and human use of northern plant species. Hands-on lab activities will provide students with opportunities to dissect plant specimens and learn to recognize important family and species characteristics. Additional lab activities will focus on preparation and mounting of herbarium specimens and medicinal and food uses of wild plants.

COURSE REQUIREMENTS

For students taking the course as BIOL 210: Introductory Biology (100 level) or permission of instructor.

For students taking the course as PLSC 221: Registration in Yukon University/University of Alberta B.Sc. in Environmental and Conservation Sciences degree program, and U of A BIOL 108, YC BIOL 101/102, or an equivalent 100-level Introductory Biology course.

EQUIVALENCY OR TRANSFERABILITY

Receiving institutions determine course transferability. Find further information at: https://www.yukonu.ca/admissions/transfer-credit.

Students in the B.Sc. ENCS program should contact an ENCS advisor if they have questions about equivalency or transferability of this course.

LEARNING OUTCOMES

Upon successful completion of this course students will:

- Understand the history of plant taxonomy and the structure of the scientific naming system for plants.
- Be able to identify anatomical structures in plants and their associated functions.
- Be able to use dichotomous keys to identify unknown plant species.
- Be able to rapidly identify the plant family of unknown specimens and identify several common Yukon species by sight.
- Be able to describe human uses of northern plants for tools, food, or medicine.
- Recognize typical Yukon plant communities and describe some key adaptations and factors shaping northern plant communities.

COURSE FORMAT

The course will consist of two 1.5 hour lectures per week and one 3 hour lab. Lectures will introduce the central concepts and background for the study of vascular plant anatomy and systematics.

Laboratory exercises will focus on plant identification with preserved and frozen plant specimens. The labs will allow students to develop expertise in the use of dichotomous keys, learn the diagnostic features of a range of plant families, and learn to recognize common northern plant species by sight.

EVALUATION

The course grade will be determined as follows for both BIOL 210 and PLSC 221 students:

Activity	**Percent**
Participation	10%
Ethnobotany Assignment	15%
Lab Quizzes (5 x 2%)	10%
Lab Exam Nov. 23rd @1-4pm, A2805	15%
Mid-Term Exam Oct. 11th (in class)	20%
Final Exam: Date and location TBD	30%
Total	100%

Participation

Readings, videos or podcasts will be assigned for each week. Students are expected to review the material prior to Thursday's lecture and be prepared to discuss the material in class. The participation grade (10%) will be based on attendance and participation during class time. In class activities may include preparing a written reflection, giving an oral presentation, contributing to a group discussion, etc.

Assignments

Ethnobotany Assignment (10% Written + 5% Presentation):

Students are required to complete a short (3-5 pages of content) review paper based on out-of-class research on human relationships with a northern plant. The use of multiple sources of evidence – local, traditional and scientific – is encouraged. In addition, students are required to design a scientific poster OR other type of visual representation based on his/her/their paper. Visual presentations will be orally described/informally presented at a public poster session during the last lab.

Exams

Lab quizzes (10%):

There will be one out-of-class assignment and four in-lab quizzes during the course that will test students in the identification of plant families, specimens and anatomical structures. Students will receive a mark of zero for a missed lab quiz, unless their absence was pre-arranged and approved by the instructor.

Lab final exam (15%):

This exam will cover botanical terminology, use of dichotomous keys, plant morphology and identification of plant specimens to family or species. The exam will be held in the Biology Lab (A2805) on Wednesday, November 23rd between 1-4 pm.

Mid-term (20%) *and Final* (30%) *exams*:

These will cover topics introduced in lectures, readings and some lab material. Students will not be expected to identify specimens in the written exams; general knowledge of plant family characteristics, botanical terminology and plant communities will be covered. The mid-term will be held during regular lecture period. There will be a lecture and lab review session prior to the final exams.

Due Dates and Late Assignments

Assignments are due at 11:55 pm on the due date unless otherwise specified. Late assignments will be penalized 5% for every 24 hours (or part thereof) that it is late (e.g. an assignment received 4.5 days late would be docked 25%) to a max of 50%. Late assignments can be handed in until the Final Exam. Assignments are expected to be submitted electronically on Moodle unless otherwise specified. Assignments are considered handed in when uploaded to Moodle or when physically received by the instructor (if applicable).

Requests for extensions must be made prior to the deadline and will be evaluated on a case-by-case basis. Accommodations will be made for deadline/exam conflicts with other courses if the instructor is given at least 10 days' notice of the conflict.

Assignment of grades

The total numerical score will be converted to a grade on Yukon University's letter grading system.

Grade	Grade Point Value	% Equivalent
A+	4.0	95-100

A	4.0	86-94
A-	3.7	80-85
B+	3.5	75-79
B	3.0	70-74
B-	2.7	65-69
C+	2.5	62-64
C	2.0	58-61
C-	1.7	55-57
D	1.0	50-54
F	0.0	Under 50%

COURSE WITHDRAWAL INFORMATION

Students registered in BIOL 210 should refer to the YukonU website for important dates. Students registered in PLSC 221 should refer to the UAlberta calendar for important dates (calendar.ualberta.ca).

TEXTBOOKS AND LEARNING MATERIALS

Required:
Flora of the Yukon Territory, by W. J. Cody. 1996 (1st ed.) or 2000 (2nd ed.), NRC Research Press.

Access options:

- UAlberta students: free access to a digital copy through the UAlberta Library
- YukonU students: digital copy ($44.95) available at: https://cdnsciencepub.com/doi/book/10.1139/9780660181103
- A few hard copies (~$90) are also available at Mac's Fireweed if preferred. Can also check Wellread Books for a used copy.

Weekly readings/videos/podcasts will be posted on Moodle.

Optional resources to aid learning plant identification:
Plant identification field guides (smaller books with common plant photos and descriptions). Mac's Fireweed caries several and Wellread Books often has treasures, especially because many good guides are out of print! One of my favourites is Alpine Plants of British Columbia, Alberta and Northwest North America by Andy MacKinnon and Jim Pojar (available at Mac's).

Illustrated glossaries of plant terminology. We will have a few copies in class, but if you're keen on plants, I recommend Plant Identification Terminology - An Illustrated Glossary, by James G. Harris and Melinda Woolf Harris. 1994 (1st ed.) or 2001 (2nd ed.). Springer Lake Publishing.

COURSE WEBSITE

All class materials will be available on the BIOL 210/PLSC 221 class site on YukonU's Moodle system https://moodle.yukonu.ca/login/index.php. This includes course announcements, the syllabus and assignments. Students must ensure they have a valid YukonU student computing account. Information on setting up is available at: https://www.yukonu.ca/student-life/technical-resources.

All students must have a valid Yukon University student computing account. Information is available here: https://www.yukonu.ca/student-life/technical-resources (scroll down to the section "Accessing your Office 365 & Moodle account"). Note that YukonU students can download for free the full suite of Microsoft Office applications (Word, Excel, PowerPoint, OneNote, Outlook) and other internet-based services (OneDrive, Sway, etc). See information at the YukonU Technical Resources web page linked above.

ACADEMIC INTEGRITY

Yukon University Academic Standards and Regulations

Students are expected to contribute toward a positive and supportive environment and are required to conduct themselves in a responsible manner. Academic misconduct includes all forms of academic dishonesty such as cheating, plagiarism, fabrication, fraud, deceit, using the work of others without their permission, aiding other students in committing academic offences, misrepresenting academic assignments prepared by others as one's own, or any other forms of academic dishonesty including falsification of any information on any Yukon University document.

Please refer to YukonU Academic Regulations & Procedures for further details about academic standing and student rights and responsibilities.

University of Alberta Academic Integrity and Code of Student Behaviour

The University of Alberta is committed to the highest standards of academic integrity and honesty. Students are expected to be familiar with these standards

regarding academic honesty and to uphold the policies of the University in this respect. Students are particularly urged to familiarize themselves with the provisions of the Code of Student Behaviour (online at www.governance.ualberta.ca) and avoid any behaviour which could potentially result in suspicions of cheating, plagiarism, misrepresentation of facts and/or participation in an offence. Academic dishonesty is a serious offence and can result in suspension or expulsion from the University.

All students at the University of Alberta are subject to the Code of Student Behaviour, as outlined at: http://www.governance.ualberta.ca/en/CodesofConductandResidenceCommunityStandards/CodeofStudentBehaviour.aspx. Please familiarize yourself with it and ensure that you do not participate in any inappropriate behavior as defined by the Code. Key components of the code include the following statements.

30.3.2(1) No Student shall submit the words, ideas, images or data of another person as the Student's own in any academic writing, essay, thesis, project, assignment, presentation or poster in a course or program of study.

30.3.2(2) c. No Student shall represent another's substantial editorial or compositional assistance on an assignment as the Student's own work.

PROFESSIONALISM AND CLASSROOM RULES OF ENGAGEMENT

Students are expected to attend all lectures and labs, be engaged and courteous in all course activities, and to be on time for class. Please do not use cellular phones during class. Laptops are permitted for note taking and in-class work; however, please do not use laptops in class for non-class-related activities.

No electronic devices, including calculators, are permitted during in-person exams

RECORDING OF LECTURES, LABS, ETC.

Audio or video recording, digital or otherwise, of lectures, labs, seminars or any other teaching environment by students is allowed only with the prior written consent of the instructor or as a part of an approved accommodation plan. Student or instructor content, digital or otherwise, created and/or used within the context of the course is to be used solely for personal study, and is not to be used or distributed for any other purpose without prior written consent from the content author(s).

Please note that some classes may be recorded using web conferencing software, and links to recordings may be posted on the class website.

ACADEMIC ACCOMMODATION

Reasonable accommodations are available for students requiring an academic accommodation to fully participate in this class. These accommodations are available for students with a documented disability, chronic condition or any other grounds specified in section 8.0 of the Yukon University Academic Regulations (available on the Yukon University website). It is the student's responsibility to seek these accommodations by contacting the Learning Assistance Centre (LAC): LearningAssistanceCentre@yukonu.ca.

TENTATIVE SCHEDULE:

Dates	Lecture Topics	Wednesday Lab Topic
Sept 6-8	Tuesday: pre-recorded **ONLINE** intro to the course (on Moodle) Thursday: Introduction to botany; plant nomenclature and the history of plant taxonomy	No lab this week
Sept 13-15	Introduction to plant anatomy and morphology	Introduction to botanical terminology and plant identification (OUTSIDE)
Sept 20-22	Non-vascular plants; seedless vascular plants; dichotomous keys	Botany Bingo – Self-directed lab, no class [marked as **Quiz 1**]
Sept 27-29	Gymnosperms and angiosperms	Seedless vascular plants: Lycopodiaceae, Selaginellaceae, Equisetaceae, Ferns
Oct 4-9	Pollination and seed biology; Plant symbionts and pathogens	Trees - Pinaceae, Cupressaceae, Salicaceae, Betulaceae (OUTSIDE) **[Quiz 2]**
Oct 11-13	**In class mid-term Oct. 11th**; Plant ecology	6 Common Families: Apiaceae, Brassicaceae, Fabaceae, Liliaceae, Asteraceae, Rosaceae
Oct 18-20	Yukon biogeography; Ecological landscape classification	**[Quiz 3]** Forest Understory Lab: Ericaceae, Scrophulariaceae, Gentianaceae
Oct 25-27	Plant adaptations to extreme environments	Northern Grasslands Lab: Poaceae, Caryophyllaceae
Nov 1-3	Yukon biodiversity: species at risk and invasive species	**[Quiz 4]** Subalpine and Alpine Tundra Lab: Ranunculaceae, Saxifragaceae, Polygonaceae
Nov 8-10	Climate change and northern plant communities **Ethnobotany Assignment Due Nov. 10th @11:55 pm**	Riparian and Wetland Areas Lab: Cyperaceae, Juncaceae, Orchidaceae
Nov 15-17	Plant Families Review; Guest speaker TBD	**[Quiz 5]** Review of plant families
Nov 22-24	Northern ethnobotany	**In Class Lab Exam – Room A2805**
Nov 29-Dec 1	Exam Review	**Poster Session 1-4 pm – Room TBD**
Final Exam – Date and Location TBD		