



Course Title: Plant Material Cultivation
Course Number: LAND 672
Professor: Mathis Natvik mathis.natvik@ucalgary.ca
403-220-7958 Office: PF 2140
Lecture Times: Oct 3-7, 2022 @ 09:00-13:00 Mountain Time
Class Location: PF 2140

Course Description:

Landscape architects are at the forefront of specifying plant materials for challenging environments such as boulevards, public parks, stormwater features, and green roofs. A thorough understanding of planting stock, growing mediums, and establishment techniques is required to successfully implement planting projects in these settings. LAND 672 will introduce students to the materials and methods for establishing plant material in the semi-arid, cold winter climate of southern Alberta. Multiple experts in the Calgary region will present important aspects of plant establishment in various settings. Invited experts will include:

- A **certified arborist** with expertise in the propagation and handling of different types of tree planting stock (e.g., bare-root stock, ball & burlap, container-grown trees, tree cages).
- An **agronomist** with expertise in growing medium specification for difficult urban settings (e.g., structural soils for boulevard plantings, soils for silvi-cells, stormwater mediums, green roof mediums, mediums for public perennial plantings).
- A **nursery manager** with expertise in large-scale propagation and planting of herbaceous stock for green roofs, public gardens, ecological restoration/naturalization projects etc.).

Teaching Approach:

LAND 672 will be delivered in various modes including in-person lectures, field trips, and walks around the University of Calgary campus. Students will receive hands-on instruction where they will see how plant material is produced and installed. They will also see how specialized soil mixes are prepared for urban plantings. For evaluation, students will prepare drawings and written specifications for a challenging planting design project such as a green roof, street tree planting, or public garden.

Course Learning Objectives

Upon successful completion of the course, you should have developed an understanding of the knowledge, skills, and technologies involved in the following:

1. To gain an increased awareness of how important it is for landscape architects to be proficient with plant materials, growing medium specification, and plant establishment.
2. Understand the cultural requirements and challenges for establishment of plants in challenging urban environments such as street tree plantings, public gardens, stormwater features, and green roofs.
3. Understand the basic components of growing mediums (e.g., mineral fraction, organic content, size particle range, porosity, drainage rates, water retention properties, pH, etc.) and how they are specified for challenging urban environments.
4. Understand the range of planting stocks and how to specify the correct type of planting stock for various settings.
5. To begin executing planting specifications at a small scale that will enable the student to apply knowledge in future courses/studios and in professional practice.

LAND 672 - PLANT MATERIAL CULTIVATION – Fall 2022 Schedule

Mon, Oct 03	DAY 1: MATHIS – IN CLASS AT SAPL -Mathis provides overview of plant material cultivation in the semi-arid cold climate of southern Alberta -introduce the assignment and evaluation criteria -source-identified seed collection for hardy Alberta nursery stock -seed cleaning and processing techniques
Tue, Oct 04	DAY 2: MATHIS – CALGARY FIELD TRIP -a look around Calgary at specialized Landscape Architecture projects that involve sophisticated use of plants -Silver Springs Botanical Garden (large-scale use of perennial plantings) -Rocky Ridge YMCA (parking lot with zero runoff using bioswales and constructed wetland) -University District tree plantings (using structural soils) -ATCO office complex with rain gardens, perennial borders, stormwater channels, and dry pond
Wed, Oct 05	DAY 3: - NATHAN GILL FIELD TRIP TO EAGLE LAKE NURSERY IN STRATHMORE, AB -ornamental plant production overview -stock selection for different projects -container production, B&B large stock, etc. -pre-grown green roof modules -turf production types - lawns, sport fields, native turf (Nature's Turf) -custom growing mediums & specification for specialized sites (LID engineered soils, bioretention soils, structural soils, etc.)

Thu, Oct 06

**DAY 4 – GERARD FOURNIER
FIELD TRIP TO FOR TREES INC IN DIDSBURY, ALBERTA**

- trees in the Alberta landscape
- site assessment (planning trees in different settings such as boulevards, harsh urban sites, parks, residential areas, institutional settings)
- species selection
- stock types & propagation methods
- planting techniques
- new/emerging technologies for trees (structural soils, silva cells, infiltration trenches, etc.)
- post-planting care
- long-term management of trees (pruning, safety, health)

DAY 4 – OLD’S COLLEGE or ESRS GREENHOUSES

- native, herbaceous wetland plant materials
- plant installation techniques (for seeds, plugs, live stakes, larger potted materials)
- constructed/engineered wetland planting materials

Fri, Oct 07

DAY 5: MATHIS – IN CLASS AT SAPL

- students present their work
 - evaluation of presentations
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Course Bibliography (recommended, not required to complete the course).

Trees and Shrubs Identification

- *Trees in Canada*, by John Laird Farrar (1995 or 2017 version)
- *Sibley Guide to Trees*, by David Allen Sibley (2009)
- *Illustrated Keys to the Conifers of Alberta* (Native Species Only), by Linda Kershaw and Lorna Allen (2019): <https://anpc.ab.ca/wp-content/uploads/2019/04/Gymnosperms-2019-04.pdf>

Herbaceous Plant Identification (Flowering Perennials, Grasses, and Annuals)

- *Flora of Alberta*, by E.H. Moss (1959)
- *Botany in a Day: The Patterns Method of Plant Identification*, by Thomas Elpel (2013)
- *Plant Identification Terminology: An Illustrated Glossary*, by James & Melinda Harris (2001)

Guides to Using Trees in the Landscape

- *Woody Ornamentals for the Prairies*, by Hugh Knowles (2003)
- *Trees and Shrubs for the Northern Plains*, by D. Hoag (1965)
- *Heritage Trees of Alberta*, by Libby Fairweather (2008)
- *Dirr's Hardy Trees and Shrubs: An Illustrated Encyclopedia*, by Michael Dirr (2011)
- *Landscaping with Native Trees*, by Guy Sternberg & Jim Wilson (1996)

Planting Design

- *The Planting Design Handbook*, by Nick Robinson (1992)
- *With People in Mind: Design and Management of Everyday Nature*, by R. Kaplan & S. Kaplan (1998)
- *Planting in a Post-Wild World*, by Thomas Rainer & Claudia West (2015)
- *The Living Landscape: Designing for Beauty and Biodiversity in the Home Garden*, by Rick Darke & Douglas Tallamy (2014)
- *Designing Urban Agriculture: A Complete Guide to the Planning, Design, Construction, Maintenance and Management of Edible Landscapes*, by April Philips (2013)

Internet Resources

- *Integrated Taxonomic Information System (ITIS)*: <https://www.itis.gov/> (for verifying scientific names)
- *Eagle Lake Nursery*: <http://search.eaglelakenurseries.com/11050003/> (local nursery)
- *Significant Trees of Alberta* (new, in development): <http://ab.registreenet.com/>
- *Wild About Flowers*: <https://www.wildaboutflowers.ca/> (local native plant nursery)
- *ALCLA Native Plants*: <https://alclanativeplants.com/> (local native plant nursery)
- *Alberta Native Plant Council*: <https://anpc.ab.ca/>
- *Alberta Trees of Renown: An Honour Roll of Alberta Trees* (1986): <http://cfs.nrcan.gc.ca/pubwarehouse/pdfs/24292.pdf>
- *Calgary Urban Forestry Strategic Plan*: <https://www.calgary.ca/CSPS/Parks/Documents/Management-Plans/Urban-Forestry-Strategic-Plan.pdf?noredirect=1>
- *Heritage Trees in Calgary*: <https://data.calgary.ca/Environment/Heritage-Trees-in-Calgary/gmxc-agg2>

Assessment Components

Item#	Title	Weight
1	Planting Method Assignment	100%
		Total: 100%

Attendance and Participation:

Class attendance and participation are essential elements in the learning process. There may be times when it is not possible for you to attend class. Please notify the instructor prior to your absence, if possible. Missing more than 25% of class hours may result in a failing grade for the course.

Grading Scale

Final grades will be reported as letter grades, with the final grade calculated according to the 4-point range. Assignments will be evaluated by percentage grades, with their letter grade equivalents as shown.

Grade	Grade Point Value	4-Point Range	Percent	Description
A+	4.00	4.00	95-100	Outstanding - evaluated by instructor
A	4.00	3.85-4.00	90-94.99	Excellent - superior performance showing comprehensive understanding of the subject matter
A-	3.70	3.50-3.84	85-89.99	Very good performance
B+	3.30	3.15-3.49	80-84.99	Good performance
B	3.00	2.85-3.14	75-79.99	Satisfactory performance
B-	2.70	2.50-2.84	70-74.99	Minimum pass for students in the Faculty of Graduate Studies
C+	2.30	2.15-2.49	65-69.99	All final grades below B- are indicative of failure at the graduate level and cannot be counted toward Faculty of Graduate Studies course requirements.
C	2.00	1.85-2.14	60-64.99	
C-	1.70	1.50-1.84	55-59.99	
D+	1.30	1.15-1.49	50-54.99	
D	1.00	0.50-1.14	45-49.99	
F	0.00	0-0.49	0-44.99	

Notes:

A student who receives a "C+" or lower in any one course will be required to withdraw regardless of their grade point average (GPA) unless the program recommends otherwise. If the program permits the student to retake a failed course, the second grade will replace the initial grade in the calculation of the GPA, and both grades will appear on the transcript.

Media and Recording in Learning Environments

Part 1

University Calendar: <https://www.ucalgary.ca/pubs/calendar/current/e-6.html>

Recording of lectures (other than audio recordings that are pre-arranged as part of an authorized accommodation) is not permitted. Students may not record any portion of a lecture, class discussion or course-related learning activity without the prior and explicit written permission of the course instructor or authorization from Student Accessibility Services. For any other use, whether by duplication, transcription, publication, sale or transfer of recordings, written approval must be obtained from the instructor for the specific use proposed. Any use other than that described above constitutes academic misconduct and may result in suspension or expulsion.

Part 2

The instructor may use media recordings to capture the delivery of a lecture. The instructor will notify all students and guests in the class that the event is being recorded. If a student or guest wants to take steps to protect privacy, and does not want to be recorded, the instructor will provide the individual (s) with an alternative means of participating and asking questions (e.g., passing written notes with questions). Students cannot be penalized for choosing not to be recorded in situations where participation is part of the course. Students must be offered other ways of earning participation credit that do not involve recording.

Any video-recording would be intended to only capture the instructor and the front of the classroom. Students/other participants would not necessarily be visible on video recordings.

University of Calgary Policies and Supports

ACADEMIC ACCOMMODATION

Students seeking an accommodation based on disability or medical concerns should contact Student Accessibility Services; SAS will process the request and issue letters of accommodation to instructors. For additional information on support services and accommodations for students with disabilities, visit www.ucalgary.ca/access/. Students who require an accommodation in relation to their coursework based on a protected ground other than disability should communicate this need in writing to their Instructor. The full policy on Student Accommodations is available at <http://www.ucalgary.ca/policies/files/policies/student-accommodation-policy.pdf>

ACADEMIC MISCONDUCT

Plagiarism involves submitting or presenting work in a course as if it were the student's own work done expressly for that particular course when, in fact, it is not. Most commonly plagiarism exists when: (a) the work submitted or presented was done, in whole or in part, by an individual other than the one submitting or presenting the work, (b) parts of the work are taken from another source without reference to the original author, (c) the whole work (e.g., an essay) is copied from another source, and/or, (d) a student submits or presents work in one course which has also been submitted in another course (although it may be completely original with that student) without the knowledge of or prior agreement of the instructor involved. While it is recognized that scholarly work often involves reference to the ideas, data and conclusions of other scholars, intellectual honesty requires that such references be explicitly and clearly noted.

Plagiarism is an extremely serious academic offence. Any suspicion of plagiarism will be reported to the Dean, and dealt with as per the regulations in the University of Calgary Graduate Calendar. For information on academic misconduct and its consequences, please see the University of Calgary Calendar at <http://www.ucalgary.ca/pubs/calendar/current/k.html>

COPYRIGHT LEGISLATION:

All students are required to read the University of Calgary policy on Acceptable Use of Material Protected by Copyright (www.ucalgary.ca/policies/files/policies/acceptable-use-of-material-protected-by-copyright.pdf) and requirements of the copyright act (<https://laws-lois.justice.gc.ca/eng/acts/C-42/index.html>) to ensure they are aware of the consequences of unauthorised sharing of course materials (including instructor notes, electronic versions of textbooks etc.). Students who use material protected by copyright in violation of this policy may be disciplined under the Non-Academic Misconduct Policy.

FREEDOM OF INFORMATION AND PROTECTION OF PRIVACY:

Student information will be collected in accordance with typical (or usual) classroom practice. Students' assignments will be accessible only by the authorized course faculty. Private information related to the individual student is treated with the utmost regard by the faculty at the University of Calgary.

UNIVERSITY STUDENT APPEALS OFFICE:

If a student has a concern about the course, academic matter, or a grade that they have been assigned, they must first communicate this concern with the instructor. If the concern cannot be resolved with the instructor, the student can proceed with an academic appeal, which normally begins with the Faculty. See: <https://ucalgary.ca/student-appeals/>

More student support and resources (e.g. safety and wellness) can be found here: <https://www.ucalgary.ca/registrar/registration/course-outlines>