DALHOUSIE UNIVERSITY

Faculty of Science Course Syllabus
Department of Biology

BIOL 2601.03
Flora of Nova Scotia
July 2020

Instructor: Marian Munro nsplants2018@gmail.com

Course dates: The course will run from July 02, 2020 until July 21, 2020 (Monday to Friday, except Wednesday July 1, 2020 - Canada Day Holiday).

Lectures: 9:05-11:55 AM Room: LSC 4009

Laboratories: 1:05-4:55 PM Room: LSC 4009/4016

Field trips: Schedules on field trip days may deviate from the lecture and lab schedule shown above. See tentative schedule for dates, times and locations. Field trips meet vans or bus in the parking area between the Biology entrance to the LSC and Kings.

Course Description

Introduction to the biodiversity of flowering plants (Angiosperms plus Gymnosperms and fern types) found in Nova Scotia. A wide range of plant communities are visited on several day-long field trips. A focus on plant identification is supplemented with lessons in plant ecology, floral biology, pollination mechanisms, natural history, and human uses (e.g., edible, poisonous, medicinal).

Course Prerequisites

One year of university courses

Learning Outcomes

By the end of this course students will be able to:

1. Use a dichotomous key to identify herbaceous and woody plant species native to Nova Scotia.
2. Know the morphology, distribution, habitat, ecology and value of many native species.
3. State, define, and give examples of the components of taxonomy, including the description, identification, nomenclature, and classification.
4. Describe a plant using the descriptive terminology of plant morphology, anatomy,

embryology, and reproductive biology.

5. Name, classify, and diagnose several of the major families of flowering plants within Cronquist system (morphological)
6. Learn how to collect, identify and process plants for herbarium specimens.

Long after this course is over you may forget many details of the material, however, there are some aspects that we hope will serve you throughout your life:

1. Appreciate the beauty and intricacy of plants and enjoy discovering things about nature.
2. Improve your skills in memory, observation, writing, and critical thinking.
3. Gain base knowledge of the structure, function and evolutionary history of plants.

Required Equipment

Hand Lens (10x magnification). Purchase at the Dal Bookstore or check out from SEASIDE.
Plant press (signed out from SEASIDE) includes papers, blotters and ventilators
Trowel (signed out from SEASIDE).
White liquid glue for mounting your plants. Any kind will do as long as it dries clear PROVIDED
Camera or phone to take photos on field trips.

Suggested Resources (Optional)

1. *Nova Scotia Plants* by M.C. Munro, R.E. Newell and N.M. Hill (2014). Available as a free download at https://ojs.library.dal.ca/NSM/pages/view/Plants
2. *Useful Nova Scotia Plants* and *Harmful Nova Scotia Plants* (free app for Android) *Forest Ecosystem Guide to Nova Scotia*. Available online. Part 1:Vegetation Types, http://novascotia.ca/natr/forestry/veg-types/pdf/vegtypes.pdf
3. Various field guides may be helpful, especially those targeted to Eastern Canada. Some of our favorites are by Boland, Peterson, and Newcombe. SEASIDE has a few copies for class use. Bibliography provided by science librarian. KEYS provided in class.

Course Assessment – Note: All assignments and tests are individual.

Assignment or test	**Marks (%)**	**Due Date**
Plant Species Presentation	5	10-Jul
Scavenger Hunts	5	throughout field trips
Plant Collection	30	20-Jul
Field Notebook	10	20-Jul
Lecture Exam	25	21-Jul
Laboratory Exam (species identification)	25	21-Jul

Plant Collection

You will each assemble, describe and mount a collection of botanical specimens containing a *minimum* of 25 herbarium-quality specimens of different species from as many different plant families as possible. The more families that are represented in a collection, together with the best descriptions (determination/location labels) and care and attention to specimen preparation and mounting, the higher the potential grade. Considering that there are more than 1600 sp. to choose from, a collection of 25 species should be a "walk in the park".

Your collection should contain 2-3 Pteridophytes (ferns and their allies), 2-3 Pinophytes (conifers), and the rest of your collection should be approximately representative of the province's angiosperms (*i.e.* 25% monocots and 75% dicots). No more than 5 woody species are allowed. Inclusion of species at risk will result in severe grade reduction - if in doubt about a species' status, ASK! Further instructions and information will be presented on the first class day, and refined throughout the duration of the course.

Field Trip Scavenger Hunts

Prior to each field trip, you will be assigned a rare, unusual, or unique plant that grows in the field trip location. No identifying information will be given except the botanical name. Students must locate the plant species in the field and show the instructor (but NOT collect the species).

Plant Species Presentation

Each student will choose one plant species native to Nova Scotia and produce a 7 minute presentation. The presentation should consult the scientific literature, highlight Latin and common names, morphology, habitat, associations, conservation status, similar species and some fun facts.

Field Notebook

When in the field, is essential to document everything you see that may be relevant to your collected specimens. During each of our field trips, you will note the plants you observe, highlighting many characters associated with your collected specimens, as well as habitat characteristics, and the plant communities of each site. You will also sketch the plants, indicating their notable features. The notebook is due at the end of the course.

Laboratory exam

Timed 'bell-ringer' lab exam will test your ability to identify 25 species of plants seen on field trips.

Conversion of numerical grades to Final Letter Grades follows the Dalhousie Common Grade Scale:

A+ (90-100)	**B+** (77-79)	**C+** (65-69)	**D** (50-54)
A (85-89)	**B** (73-76)	**C** (60-64)	**F** (<50)
A- (80-84)	**B-** (70-72)	**C-** (55-59)	

Course Policies

1. **Attendance is mandatory.** You are expected to attend all lectures, labs, and field trips. Attendance will be taken and unnecessary, unplanned absences will considered toward your grade. If there will be a problem that prevents you from attending, notify the instructor *before* the absence.
2. **Participation.** You are expected to participate and cooperate in all class activities. Bonus marks may be awarded to students who regularly contribute meaningful questions/dialogue in class.
3. **Preparation for Field Trips.** Please be fully prepared and ready for all field trips. You are responsible for your own lunches/water, appropriate clothing, and required equipment as per the included lists. Transportation is provided for all field trips except the Halifax walking trip. Field trips will continue independent of weather. See list of what to bring on field trips.
4. **Safety.** You must adhere to all safety guidelines. When out of sight of instructors, you must stay in groups of 2 or more and inform instructors of where you will be going and when you will be back. For your safety, alcoholic beverages and recreational drugs are not permitted on field trips.
5. **Brightspace.** We will use the online learning system to post class information and links. Lecture slides will be posted there as well as information about assignments.
6. **Late assignments.** Marks will be deducted 10% for each day an assignment is late.

What to bring on field trips

- Small day/backpack
- Lunch/snacks/water (enough to last a full day in the field, potentially under hot sun)
- Rain gear, long pants, long-sleeved shirt
- Sun hat, sunglasses, and sunscreen
- Insect repellent and/or bug hat
- Hiking boots or sturdy walking shoes
- A field notebook (provided) plus pencils
- Hand lens
- A clipboard or fold-flat binder will be useful

- Plant collecting equipment including bags for collecting plants, trowel, and pruner
- Camera/binoculars/cell phone/tablet and any other equipment useful for a day in the field

Course Schedule (tentative)

Day	Date	Morning	Afternoon
1	July 2 Thursday	1. Course Introduction 2. Botany – the language, floras, manuals, field guides, nomenclature 3. Botanical systematics – APG versus Cronquist 4. morphology – keys to identification 5. How to use dichotomous keys 1 6. Orientation to tomorrow's field trip	Lab #1: Tools: glossary, dissecting scope; describing plant collections; illustrating/sketching plants. Preparing specimens for preservation. Working from fresh and dried plants, practice in observing and identifying calyx, corolla, leaves, stems and roots and how the language of botany describes conditions. Continuing practice with dichotomous keys.
2	July 3 Friday	Systematics 1: The ferns and their allies; the conifers: characteristics of each Phylum, orders and families. Morphology, identification: fronds, stipes, rhizomes, spores; seeds, cones, strobili. Introduction to field records, collection, plant collection assignment and field notebook in preparation for afternoon trip.	FIELD TRIP – Halifax. Meet at Sir Sanford Fleming Park (the Dingle). Halifax Metro bus number 25 will take you there. Mixed forest, small pond, wetland; rocky habitat. Trails.
3	July 6 Monday	Systematics 2: Selected Eudicot Families: Ranunculaceae, Rosaceae, Ericaceae Dichotomous keys 2: with respect to rosiids and ericads.	Lab #2: Work on collections; floral morphology, and illustrating plants; examine examples of families collected. Plants of Peggys Cove intro.
4	7-Jul Tuesday	FULL DAY FIELD TRIP to PEGGYS COVE departing from the Biology LSC parking area at 9:05 AM, returning approximately 3 PM.	
5	8-Jul Wed.	Systematics 3: the flowering plants: Asters	Lab #3: Floral structures. Plants of significance for tomorrow's field trip.
6	July 9 Thursday	FULL DAY FIELD TRIP to KC Irving Botanic Garden	
7	July 10 Friday	Systematics 4: the monocot families and their placement in both Cronquist and APG systematics; sedges, grasses, orchids,. Dichotomous keys 3	Lab #4: Class presentations (plant species profiles). Collected monocots; flowers. Grass and sedge flowers. Work on field book and collections.

Day	Date	Morning	Afternoon
8	July 13 Monday	Quiz on classification and families **Species at Risk in NS** Special guest lecture: TBD	Lab #5: leaves and stem arrangements, roots and rhizomes. Beach plant communities and invasion in prep for tomorrow's field trip; work on plant collections, field book and practice bell ringers (timed ID quiz).
9	July 14 Tuesday	FULL DAY FIELD TRIP to MARTINIQUE BEACH and SALTMARSH departing from the Biology LSC parking area at 9:05 AM, returning approximately 4 PM.	
10	July 15 Wed.	Useful and poisonous plants: wildcrafting, 5Ps, types of phytotoxins and examples of each found in wild. What to do? I have been poisoned.	Lab #6: Work on collections and final work on environmental assessment project.
11	July 16 Thurs.	Review of morphology, glossary, floral structures. Review of plant communities seen. Discussion of gypsum-loving plants and riparian plants in prep for field trip to Hants Co.	Lab# 7: Final work on collections, drawings and field book. Submit Floral Element assignment/presentations BIOL3219 only! (online 12:00AM)
12	July 17 Friday	FULL DAY FIELD TRIP to HANTS CO: Smileys Provincial Park (no collecting) and Brooklyn Road mine site. Caution: poison-ivy. Depart from the Biology LSC parking area at 9:05 AM, and return approximately 5 PM.	
13	Jul 20 Monday	Introductions and invasive species: mode of introduction with examples; invasion; impact of invasive species	Finish collections and field books and submit; review.
14	Jul 19 Tuesday	One hour review and questions (9-10 AM).Lecture exam (10:30-11:59 AM).	Lab exam: timed plant identification (1:00-3:00).

This course is governed by the academic rules and regulations set forth in the University Calendar and by Senate. These may be found on Brigtspace as a document.