Plant Biology (BIOL 340-01): 3 credits

Course outline: Fall 2016 (Wed/Fri 08:45-10:00)

Instructor:

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Office: SP375.23
Office hours: Wed 10:00-11:00
or by appointment on the days that have scheduled labs

There are two components to this course: the theoretical component (covered in the lectures) and the practical component (covered in the laboratory).

Course Description as per Undergraduate calendar:

BIOL 340 Plant Biology (3 credits) Prerequisite: BIOL 225, 226. This course surveys the biology of the plant kingdom. Topics include the evolution of the major groups and a comparative analysis of the form (anatomy), function (physiology), and life history of plants. Examples from the local flora are emphasized. Lectures and laboratory.

Lectures:

Location: CC112 Loyola Campus

Schedule: every Wednesday & Friday: 8:45-10:00
Wed. Sept. 7, 2016 - Fri. Dec. 2, 2016 inclusive

Labs:

Location: SP380-5 Loyola Campus

The lab section of the course is worth 20% of the final grade. Each student is required to attend 5 labs (4 hours each) and to submit lab reports on time as determined by the T.A. for the course. Students are scheduled to attend a lab every second week (either on the Wed or Thurs) and labs will reflect topics covered in class. Specific lab details will be outlined in a separate document.

Course Objectives:

Objectives of this course are to enlighten students about the vast field of botany and to help them appreciate the fundamental role that plants play in the ecosystem.

We will briefly look at plants in the global context, from a phylogenetic, ecological and evolutionary point of view. For this reason, we will look at other photosynthetic organisms that do not belong to the plant kingdom, specifically cyanobacteria and the algae. We will examine plants (anatomy and physiology) from the least evolved to the most evolved and we will study the evolutionary changes that plants needed to undertake to make the shift from an aquatic habitat to the terrestrial habitat prevalent today.

We will briefly look at heterotrophic bacteria and fungi in the context of plant pathology.

Finally, emphasis will be placed on the importance of plant symbiotic associations with fungi (mycorrhizae).

If time permits, we will very briefly cover the Rhizobium-legume symbiosis.

The main objective is that students should develop the competence to be able to pursue different areas of botany independently in the future (on the labor market or in graduate school).

Topics covered (not necessarily in the following order):

- Evolution
- Plant Systematics and Phylogenetics
- Prokaryotes
- Protists: Algae
- Fungi
- Bryophytes
- Seedless vascular plants (Ferns)
- Gymnosperms (conifers)
- Angiosperms (flowering plants)
- Early Development of the Plant Body
- Cells and Tissues of the Plant Body
- The Root: Structure and Development
- The Shoot: Primary structure and Development
- Secondary Growth in woody plants
- Photosynthesis – C3, C4 and CAM plants
- Plant Nutrition and Soils
- The Movement of Water and Solutes in Plants
- Plant Symbiotic Associations: Mycorrhizae
- Plant Symbiotic Associations: Rhizobium (if time permits)
- Regulating Growth and Development – The Plant Hormones
- Plant Diseases
- Secondary metabolites and Plant defense (if time permits)
- Plants in Agriculture (if time permits)

Course Evaluation:

Midterm Exam #1:	**15%**
Midterm Exam #2:	**15%**
Final Exam:	**45%**
Laboratory Section:	**20%**
Class Attendance, Participation and demonstrated interest in the course*:	**5 %**

In the Biology Department, the following scheme is used to translate numbers to letter grades:

A+	≥ 90	C+	= 67-70
A	= 85-90	C	= 64-67
A-	= 80-85	C -	= 60-64
B+	= 77-80	D+	= 57-60
B	= 74-77	D	= 54-57
B-	= 70-74	D-	= 50-54
		F	<50

Important Note: There will be NO supplemental exam offered for students who fail any or all components of this course.

There is ZERO tolerance for any form of cheating or plagiarism. Please consult the Concordia University academic code of conduct pdf file posted on the MOODLE website.

Students who arrive late for exams held in class will NOT get extra time. They are expected to hand in the exam at the same time as the rest of the class. If they arrive more than 30 minutes after the start of the exam, they will not be permitted to write the exam and NO replacement exam will be offered.

All exam copies MUST be turned in prior to leaving the room.

First name, last name and student # must be **CLEARLY** marked on all exam sheets and lab reports. Failure to do so will result in loss of marks. NO EXCEPTIONS.

Important Information about Exams:

Midterm Exam #1: Friday, Oct. 7, 2016
Multiple choice questions (100%)
Material to be covered will be posted on MOODLE no later than 1 week prior to date of exam.

Midterm Exam #2: Friday, Oct. 28, 2016
Multiple choice questions (70%)
Short answer questions (30%)
Material to be covered will be posted on MOODLE no later than 1 week prior to date of exam.

Final Exam: date and time to be determined by the university
Multiple choice questions (70%)
Prepared essay question (20%)
Additional essay question (10%)
The FINAL EXAM will cover material from the entire course.

FORMAT for multiple choice questions (all exams):

For each of the exams, multiple choice questions can be any or all of the following types of formats (or variations therein):

Choose the best answer:
a)
b)
c)
d)
e)

Choose the answer that is not correct:
a)
b)
c)
d)
e)

Choose among the following (only one answer is correct):
a)
b)
c)
d) all of the above
g) none of the above
h) a and b
i) b and c

There may also be some statements where the student is required to answer TRUE or FALSE.

FORMAT for short answer questions (2nd exam):

Any or all of the following formats may be used for short answer questions:

- fill in the blanks (one to a few words required)
- answers that require anything from one to a few sentences
- labelling of structures in a diagram

FORMAT for Essay Questions (FINAL EXAM):

TWO essay questions will be posted on MOODLE no later than November 4, 2016.

For each question, students will have the opportunity to put together their thoughts, and even discuss amongst themselves how these questions should be answered. If they are having difficulty with certain concepts, they can do extra reading. The purpose of this exercise is to get students to **LEARN and UNDERSTAND** the course material.

ONLY ONE of the two questions posted on MOODLE will be asked at the final exam (20% of the final mark). An additional related question on the same topic will be asked at the final exam (10% of the final mark).

Preparation of both questions will be invaluable for the answering of multiple choice questions on the final exam.

Grading Standards for short answer and essay questions:

1) Course material (the science): 90%
2) Writing quality: 10%
   Arguments are expected to be well written, coherent and demonstrate logical flow (structured). The level of writing should be appropriate for 2nd year university students. Students are free to answer the questions in ENGLISH or FRENCH, according to their preference.
3) Students with difficult to read handwriting are encouraged to print. I can only grade you properly if I am able to read your writing. Marks may be deducted if I have difficulty correcting the exam.

Course materials:

Recommended reading:

Text Book: Evert and Eichhorn (2013) Raven Biology of Plants (8th Edition), ISBN:13:978-1-4292-1961-7.

http://www.macmillanhighered.com/launchpad/raven8e/3705686

References of additional reading materials will be posted on MOODLE as the need arises. Links to youtube videos will be posted on MOODLE.

Course load:

As per the undergraduate calendar,
"Each credit represents a minimum of 45 hours of academic activity, including lectures, tutorials, laboratories, studio or practice periods, examinations, and personal work."

For a 3 credit course, minimum academic activity corresponds to 135 hours for the entire semester.

- 32.5 hours allotted to lectures and midterm exams
- 20 hours allotted to labs
- 3 hours allotted to FINAL EXAM
- 79.5 hours allotted to personal study (6.11 hours per week)

Therefore, students can expect to spend a minimum of 6 hours a week on self-study, required or suggested readings, and required or suggested videos. Obviously, this can vary according to student background and personal interest.

Rights and Responsibilities:

please visit the following site for a list of rights and responsibilities:

http://www.concordia.ca/academics/undergraduate/calendar/current/17-30.html

Students are responsible for consulting the course web site on MOODLE on a regular basis.

Important announcements regarding the course, as well as extra reading material and links to youtube videos will be posted on MOODLE regularly.

The MOODLE website is the final authority where ambiguity or confusion may exist on any pedagogical matters discussed in class.

Students are expected on be on time for classes and labs.

Cellular phones **MUST** be turned off and put away during the class time and laboratory time.

Disclaimer: "In the event of extraordinary circumstances beyond the University's control, the content and/or evaluation scheme in this course is subject to change".