

# Concordia University

## COMMUNITIES AND ECOSYSTEMS (BIOL 353)

### Course Outline

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SEMESTER	<b>WINTER 2016</b>
DAY / TIME	<b>Wednesday &amp; Friday / 8:45-10:00am</b>
ROOM	<b>LOY – HB 130</b>
INSTRUCTOR	<b>Jean-Philippe (JP) Lessard</b>
OFFICE	<b>LOY – SP 437.09</b>
EMAIL	<b>jp.lessard@concordia.ca</b>
TEACHING ASSISTANT	<b>Julie Arrowsmith</b>
OFFICE	<b>LOY – SP 301.12</b>
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### COURSE DESCRIPTION

This course presents an introduction to ecological communities and ecosystems, the processes that maintain them and their emergent properties. Topics include the interactions between abiotic and biotic factors in determining community composition, the concepts of niche and habitat, succession theory, community diversity and stability, energy flow and nutrient cycling. Examples emphasize both aquatic and terrestrial ecosystems, and the major global biomes. Communities and ecosystems are also discussed in the context of global changes such as climate change and biological invasions. **Prerequisite:** Biology 225, 226 or permission of the department.

### REQUIRED TEXT

- Smith TM, Smith RL & Waters I. 2014. *Elements of Ecology* (Canadian Edition). 1<sup>st</sup> edition. Pearson Canada Inc. 744 pp.

### FACULTATIVE LEARNING TOOL (\*highly recommended\*)

- Top Hat (<https://tophat.com/>). You should have received an e-mail link from your TA with instructions on how to sign up for Top Hat.

### LECTURES

Lectures will cover the material in assigned chapters (or chapter sections) and rely on selected scientific articles to provide concrete examples of relevant scientific research. You should read the assigned chapter(s) and article(s) before coming to class. Because my lectures will not always follow the order in which the material is presented in the textbook, I highly recommend that you attend lectures. I encourage students to communicate with each other and work in small groups to review material.

## **SUPPLEMENATRY READINGS**

Scientific articles selected from the primary literature will be assigned to supplement material covered in the textbook when needed. PDF files of these articles can be downloaded from Moodle. These articles will usually be mentioned during the lectures, where important points will be emphasized. You are not expected to know the details of each article, but you should be familiar with the general ideas, and understand the main points.

## **IN-CLASS PARTICIPATION**

Points will be given for participating in interactive in-class activities. In order to promote in-class interactions between the teacher and students, and among students, we will be using a teaching platform named Top Hat. This will enable me to ask you questions during the lecture that you can then answer with your cell phone, tablet (e.g. iPad) or laptop. The questions will be aimed at evaluating your understanding of the course material. At the end of the semester, you will receive points based on the total number of questions you answered (up to 5% of the total grade), and for those you answered correctly (up to 5%).

## **EXAMS**

There will be a mid-term examination and a final examination. The final exam will cover all material presented in class during the semester.

## **EVALUATION**

PARTICIPATION	10% (or 0% if not using Top Hat)
MID-TERM	40% (or 45% if not using Top Hat)
FINAL	50% (or 55% if not using Top Hat)

## **GRADING SCHEME**

A+>90, A=85-89, A-=80-84, B+=77-79, B=73-76, B-=70-72, C+=67-69, C=63-66, C-=60-62, D+=57-59, D=53-56, D-=50-52, F<50

## **OFFICE HOURS**

I do not have fixed office hours. If you need clarifications on the material covered during lectures, I strongly encourage you to come see me immediately after class. You may also schedule an appointment with me via e-mail. If you do so, please suggest a specific day and time (even better if you can suggest a few options). For any issues related to course logistics, grading scheme or Top Hat, contact your TA.

**TENTATIVE SCHEDULE** (subject to change during the semester – some topics might not be covered and others might be expanded)

<b>DATE</b>	<b>L#</b>	<b>TOPIC</b>	<b>READING</b>
06-Jan	L1	Introduction & definition	Ch. 1
08-Jan	L2	Quantification of community structure	Ch.16
13-Jan	L3	Community change in space I	Ch. 23
15-Jan	L4	Community change in space II	Ch. 27
20-Jan	L5	Temporal dynamics	Ch. 17
22-Jan	L6	Spatial dynamics	Ch. 12, 18
27-Jan	L7	Coexistence & Evolutionary Dynamics I	Ch. 13
29-Jan	L8	Coexistence & Evolutionary Dynamics II	Ch. 6, 13
03-Feb	L9	Competitive interactions I	Ch. 13
05-Feb	L10	Competitive interactions II	Ch. 13
10-Feb	L11	Positive interactions	Ch. 15
12-Feb	L12	Trophic interactions	Ch. 14
17-Feb	L13	Foodwebs I	Ch. 16
19-Feb	L14	Foodwebs II	Ch. 16
24-Feb		SPRING BREAK	
26-Feb		SPRING BREAK	
02-Mar		MID-TERM	
04-Mar	L15	Productivity and energy flow	Ch. 20
09-Mar	L16	Decomposition	Ch. 21
11-Mar	L17	Biogeochemical cycles	Ch. 22
16-Mar	L18	Species diversity and ecosystem stability	Ch. 19
18-Mar	L19	Species diversity and productivity	Ch. 16, 19
23-Mar	L20	Biodiversity hotspots	Ch. 27
25-Mar		EASTER (UNIVERSITY CLOSED)	
30-Mar	L21	Habitat modification	Ch. 27
01-Apr	L22	Introduced species	Ch. 27
06-Apr	L23	Effects of climate change on communities	Ch. 28
08-Apr	L24	Biodiversity, environment, economy and society	Ch. 28