University of Victoria – Department of Biology

Food Web Ecology, BIOL 468

Spring 2024

Course description

This course builds on previous courses in ecology to evaluate the processes shaping the structure and dynamics of food webs. Lectures will rely on a combination of both theory and empirical examples, with a strong dose of practical application to conservation and management. Lectures will be drawn from the following topics: food web structural organization, competition, predator-prey interactions, age- and size-structured interactions, transfer rates in food webs, nutrient-driven aquatic food webs, spatial food webs, disease-mediated food webs, human-dominated food webs, diversity-stability, and food web superstructure. There is no course textbook, but obligatory (and testable) readings will be assigned that relate to course material.

Through this course it is intended that students will develop an understanding of (1) the logical basis and methods of application of different techniques used to assess trophic connections among different members of the food web as well as their strengths and limitations, (2) the logical basis for theoretical models of a variety of food web interactions and how they shape the stability and probability of long-term persistence of food web members, (3) how to build computer simulation models in R to predict the outcome of food web interactions, (4) methods of analysis of food web data to evaluate alternative hypotheses, (5) how different biological features condition the strength of food web interactions and their long-term consequences, and (6) how food web interactions contribute to conservation challenges and potential management solutions.

Contact details

Prof. John Fryxell, jfryxell@uvic.ca, CUN room 19, Office hours: M/Th 12:30-1:30
Dr. Catherine (Cat) Stevens, cjsteve@uvic.ca, , Bob Wright Centre A405
Class meetings will be in CUN room 146 on M/Th 10:00-11:20

Course Content (tentative)

Date	Day	Lec	Topic	Notes (from UVic calendar)
08 Jan	M	1	Introduction and food web modules	
11 Jan	Th	2	Feeding and the functional response	
15 Jan	M	3	Predator-prey interactions	
18 Jan	Th	4	Competitive interactions	
22 Jan	M	5	Lipids	Cat Stevens lecture - Last day for 100% reduction of tuition fees
25 Jan	Th	6	Lipids	Cat Stevens lecture - Last day for adding courses
29 Jan	M	7	Isotopes	Cat Stevens lecture
01 Feb	Th	8	DNA Barcoding	Cat Stevens lecture
05 Feb	M	9	Nutrients, phytoplankton, and zooplankton	
08 Feb	Th	10	Nutrients, phytoplankton, and zooplankton	
12 Feb	M	11	Trophic cascades	Last day for 50% reduction of tuition fees for courses

15 Feb	Th	12	Mid-term exam	
19 Feb	M			Reading week
22 Feb	Th			Reading week
26 Feb	M	13	Disturbance and food webs	
29 Feb	Th	14	Spatial food webs	Last day for withdrawing from courses without penalty of failure
04 Mar	M	15	Spatial food webs	
07 Mar	Th	16	Disease-mediated food webs	
11 Mar	M	17	Human-dominated food webs	
14 Mar	Th	18	Human-dominated food webs	
18 Mar	M	19	Diversity, productivity, and stability	
21 Mar	Th	20	Food web restoration	
25 Mar	M		Group project	No class
28 Mar	Th		Group project	No class
01 Apr	M	21	Food web superstructure	
04 Apr	Th	22	Review	

Methods of Assessment

i. Nature of the examinations: A mix of short answer and short essay questions based on lectures, discussions, and assigned readings. A sample examination will be provided.

ii. Assessment:

Assessment		
Form of Assessment	Weight of Assessment	Due Date
Midterm exam	20%	Th 15 Feb in class
Final exam	40%	Set by OREM
Group project	40%	Mon 8 Apr

Students that are unable to attend the mid-term exam for any reason will be required to write a 10 to 12-page term paper (double-spaced, 12 pitch Times Roman font, 1 in margin), not including title page, literature cited, figures, or tables that provides a literature review and personal commentary on any topic related to lecture material, subject to written approval by the course instructor. This make-up term paper is due by 3:00pm on 8 April. A make-up mid-term exam will not be provided under any circumstances, nor will the mid-term examination date or time be changed to accommodate conflicts with those in other courses. The group project and final exam are both required elements.

The group project will be based on the efforts of 3-4 team members. Each project will provide a thoroughly-documented conservation and management assessment of a specific system, using principles of food web ecology to guide analysis of underlying challenges and logically-based prescription for recovery. The final group report should include a title page with names and student

numbers of all group members, a 1 page abstract, a maximum 8 page review of the general biology and ecological drivers in the system, a maximum 4 page synopsis of perceived threats, conservation concerns, or management issues, a maximum 4 page discussion of thoroughly justified recommendations. Supporting tables, figures, and literature cited should be attached at the end, with no page limit. Format will be double-spaced, 12 pitch Times Roman font, 1in (2.5cm) margins, with proper use of headings/subheadings and citation style as per the journal Ecology. Team members will be assigned by random draw by the course instructor on 18 March. The group project write-up is due by 3:00pm on 8 April. Assessment will be partially based on a formal self-assessment by each person in the group (5%), evaluation of that self-assessment by fellow team members (5%), and the final project write-up by the entire team (30%). All material in the write-up must solely reflect the work of the submitting group members. Final project reports will be submitted via a course dropbox and will be formally evaluated for plagiarism.

Any changes to the evaluation scheme will be considered on a case-by-case basis, subject to majority approval by the entire class.

UVic Policies and Procedures

Academic Integrity: The university expectation is that all work you produce for this course will be your own, and there will be zero tolerance in this course for plagiarism of any form. Any words or ideas that are not your own MUST be acknowledged through citation, including the use of AI assisted text preparation. Plagiarism includes “recycling” work from other classes, and it includes copying from online sources. It is your responsibility to familiarize yourself with UVic’s Academic Integrity Policy: http://web.uvic.ca/calendar2011/FACS/UnIn/UARe/PoAcI.html and the library’s website on plagiarism: http://library.uvic.ca/site/lib/instruction/cite/plagiarism.html for the university policy on academic integrity and useful information on avoiding plagiarism. Any form of academic dishonesty will result in an automatic ‘0’ for that assignment and possibly the entire course for all individuals involved.

Course Registration: It is your responsibility to attend to ADD/DROP dates published in the Calendar and posted on the Undergraduate Records website. You must not assume you will be dropped automatically from a course simply because you do not attend class. It is your responsibility to check your records and registration status, and to read the appropriate section of the current UVic Academic Calendar regarding your rights and obligations.

Accessibility: Students with diverse learning styles and needs are welcome in this course. If you have a disability/health consideration that may require accommodation to ensure that you succeed in this course, please talk to me (or staff at the UVic Resource Centre for Students with a Disability) as soon as possible.

The RCSD staff are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations http://rcsd.uvic.ca/. The sooner you let us know your needs the quicker we can assist you in achieving your learning goals in this course.

Positivity and Safety: UVic is committed to promoting, providing and protecting a supportive and safe learning and working environment for all its members.