

BIOL 461/561: Fisheries Ecology and Management

Lecture: Mon-Thurs 2:30-3:50— DSB C130

Tutorial: Thurs 4:00-4:50— DSB C130

Grad student tutorial: Mon 4:00-4:50— DSB C130

FALL 2026 (CRN: 10397/8, 10407/8)

Objectives: To examine the principles of fisheries science from the basic biology of individuals to dynamic processes of populations, whole fisheries, and how mathematical models are derived to predict changes in fisheries for management purposes.

Instructor: Francis Juanes, 116a Petch, 250-721-6227, juanes@uvic.ca

TA: Talen Rimmer, 041E Petch, trimmer@uvic.ca

Texts: Required: Jennings, S., M.J. Kaiser, and J.D. Reynolds. 2001. *Marine Fisheries Ecology*. Blackwell Science Ltd. Oxford, UK. 417pp. **Now available as an ebook in the library**

Recommended: King, M. 2007. *Fisheries Biology, Assessment, and Management*. Blackwell Science Ltd. (any edition); Gotelli, NJ. *A primer of Ecology*, Sinauer (any edition),

Grading:	3 Exams	each exam 10% of grade
	Exercises (6)	35
	Research exercise	15% (12% for exercise, 3% for species 'choice')
	Oral presentation	15%
	Peer review	5%

Grading Policy: You are expected to attend all lecture and tutorial sessions. Lectures will not be recorded. All homework exercises (including reading presentations) must be handed in by 2:30 pm on the due date. Late assignments will incur a 20% penalty during the first 7 days past the due date. No assignments will be accepted more than 7 days past the due date.

Exams: Exams will be held during class time. Any makeup exams will be ORAL exams.

Exercises: There will be a 6 exercises (5 @ 4% each, and 1 @ 15% (3A: 2%, 3B:12%)) due approximately biweekly, delivered and submitted through brightspace.

Paper: A brief summary of the fisheries biology and management of an *imaginary* (freshwater or marine) species. A handout outlining directions, and appropriate literature and format will be distributed in class. For library research help, see our course library guide, <http://libguides.uvic.ca/FisheriesEcology>

Species biology and 5 references: Due November 5 (2%)

Research exercise: Due November 26 (13%), to be completed in class

Presentations: Students will deliver a live oral presentation on species research exercise during the last day of classes (December 7 to extend into the grad tutorial, plan for a long afternoon) or the study break (December 8-9). Graduate students will lead book review and present oral and written summaries of assigned chapters, and work on a data project.

Grading scale (GPA): A+=90-100 (9); A=85-89 (8); A-=80-84 (7); B+=77-79 (6); B=73-76 (5); B-=70-72 (4); C+=65-69 (3); C=60-64 (2); D=50-59 (1); F=<50 (0).

Course Outline

Part 1. Introduction

Basic definitions

Marine Fisheries Management:

Current Issues	
Objectives and goals	Chapter 1, 17
Marine ecology and production	Chapter 2
Fishery Resources	Chapter 3
Fishing Gear and Methods	Chapter 5
History of Fisheries	
Aquaculture production	
Fisheries today: wild vs aquaculture	
Global	
Canada	

EXAM 1--OCTOBER 5

Part 2. Population dynamics

Chapters 4, 9

Age and Growth
Density-independent mortality
Density-dependent mortality
Reproduction
Recruitment
Stock-recruitment models
Age-structured models

EXAM 2--OCTOBER 29

Part 3. Fishery processes

Chapters 7, 8

Surplus production models
Dynamic Pool models (Yield per recruit)
Cohort models (Virtual Population analysis)
Management tactics and strategies
Socio- and Bio-economic models Chapters 6, 11
Conservation issues Chapters 13-16

Species choice and references due **NOVEMBER 5**
Research exercise due on **NOVEMBER 26**
Oral presentations due on **DECEMBER 5**
Peer reviews due on **DECEMBER 9**

EXAM 3—DECEMBER 3

Part 4. Student presentations (a mini-symposium on Dec 7 or during finals study break)

NOTE, Monday October 12th, is a holiday and Monday Nov 9th is reading break.

Course schedule--DRAFT

Date		Topic	Deadlines
Thu 10 th Sep	Lecture	Course introduction/overview	
	Tutorial	No tutorial	
M 14 th Sep	Lecture	Production	
Thu 17 th Sep	Lecture	History of Fisheries Fisheries Resources (asynchronous)	Exercise 1 due (Fishmonger)
	Tutorial	Fishmonger discussion	
M 21 st Sep	Lecture	Fishing gear	Reading Exercise 1 (in-class quiz)
Th 24 th Sep	Lecture	Fisheries Today (Global)	
	Tutorial	Library visit	
M 28 th Sep		Fisheries Today (Canada)	Exercise 2: Taking Stock (in-class quiz)
Th 1 st Oct	Lecture	Age/growth	
	Tutorial	Collecting ONC data Guest: Wylee Fitz-Gerald	
M 5 th Oct		EXAM 1	In-class
Th 8 th Oct	Lecture	Aquaculture	Exercise 3A: ONC data
	Tutorial	Review ONC data Describe Exercise 3B	
M 12 th Oct		HOLIDAY	
Th 15 th Oct	Lecture	Mortality-1	
	Tutorial	Exercise 3B refresher Guest speaker-TBA	
M 19 th Oct	Lecture	Mortality-2	Exercise 4: mortality
Th 22 nd Oct	Lecture	Stock-recruitment-1	Exercise 3B: growth
	Tutorial	Exercise 3B discussion	
M 26 th Oct	Lecture	Stock-recruitment-2	
Th 29 th Oct		EXAM 2	In-class
		No Tutorial	
M 2 nd Nov	Lecture	Reproduction	
Th 5 th Nov	Lecture	Age structure History of Stock-Recruitment	Species choice due
	Tutorial	Guest Speaker-TBA	
READING BREAK			
Th 12 th Nov	Lecture	Surplus Production models	Exercise 5: life tables
	Tutorial	Guest Speaker-TBA	
M 16 th Nov	Lecture	Dynamic Pool models	
Th 19 th Nov	Lecture	VPA models	
	Tutorial	Guest Speaker-TBA	
M 23 rd Nov	Lecture	Multispecies and Ecosystem models	

Th 26 th Nov		Research Exercise	In-class
	Tutorial	Guest Speaker-TBA	
M 30 th Nov		Management Strategies	
Th 3 rd Dec		EXAM 3	In-class
	Tutorial	Work on oral presentations	
Sa 5 th Dec (<11:59 pm)		NO CLASS	Oral presentations due
M 7 th Dec		Final student presentations	In-class
W 9 th Dec		NO CLASS	Peer review due

Course description and learning outcomes

Lectures are where most of the course content will be delivered, with lecture notes available on brightspace before the lecture is delivered. This is also where any updates on course material, deadlines, seminars of interest, etc. will be announced. I will also briefly summarize the previous lecture's highlights at the beginning of a lecture. These summaries will not be posted nor will my lectures.

Exercises are intended to develop analytical skills by applying course information to practical questions about age and growth, mortality, life tables, etc. We will use EXCEL for all computations. For exercise 3, we will go over results in tutorial on days it is due. Students can choose to upload revised responses which would be graded out of a maximum of 80% of the original grade (but only if they have already uploaded a completed exercise). Exercises will include a fish market visit review, a paper review and a fisheries film review. These are intended to give students a better sense of the human dimensions side of fisheries. We will provide a specific format for the fish size data collection and market reviews, and specific questions for paper and film reviews which will be completed as in-class exercises.

Tutorials will serve various purposes including further discussion/clarification of lecture material, detailed overview of exercises, and discussions with outside speakers. The speakers could include an ONC scientist who will introduce and help learners collect data for the age/growth exercise, scientists from Archipelago Marine Research who will talk about electronic monitoring of BC fisheries, a scientist from the Buck Suzuki Foundation along with an indigenous fisher who will provide an indigenous perspective on a selected BC fishery, presentations about selected fishery science projects from Juanes lab graduate students, and/or a talk on how to best give an oral presentation.

Exams (3-4 pages, mainly short answers) will test knowledge of lecture material (and reading) with some questions from tutorial sessions included. No calculators will be needed.

Research Exercise will develop writing skills and allow students to synthesize course material by focusing on the biology, fishery status, fishing methodology and management of an imaginary (freshwater or marine) species. Basic biological data (max length, age, habitat, location, etc.) will be provided. Species 'choice' with developed biological data (fecundity, growth, etc.) will be required before final exercise along with 5 references for 'similar' real species. Final exercise will be developed in class after small group discussion.

Final oral presentation is intended to develop oral presentation skills. Students will summarize their written research exercise in 7 minutes and answer questions from the audience. Students will also evaluate each other through an anonymous peer review. We will devote a tutorial towards outlining

useful presentation skills. Students whose accommodation state they can't give presentations, will be asked to record a presentation on zoom which will be shown at the year-end symposium.

Minimum Requirements for Passing This Course

A grade >50% is needed for completion.

Required course elements:

- Exercise 3 (A and B)
- Exams 2 and 3
- Research Exercise
- Oral presentation

Failure to complete one or more of these elements will result in a grade of "N" regardless of the cumulative percentage of all other elements of the course. N is a failing grade and factors into GPA as a value of 0.

In accordance with the University's policy on academic concessions, "A student who completes all course requirements is not eligible for an academic concession". Consequently, students can only request deferrals for the completion of required course components and not for non-essential course components. See [Academic Concession Regulations](#)

Grading

All assignments will be graded with percentage grades using the standard UVic [scale](#) and will follow the UVic policy on [Evaluation of Student Achievement](#). Grades are not official until they have been approved by the Chair of the Department of Biology.

Policy on Late Assignments

Limited, short-term extensions may be granted on a case-by-case basis, *as long as the request is made before the day the assignment is due*. Appropriate accommodations will be made for those with an accommodation letter from the Center for Accessible Learning, but please note that these letters state specifically that such an accommodation is not "a blanket extension on all work, nor is it a license to submit work after the course has ended." **No make-up work will be accepted after classes end.**

Intended Learning Outcomes

In this course students will learn about multiple aspects of fisheries science, from an ecological and management perspective. In Part 1, we will focus on providing a historical background as well as outlining harvest methods, commonly harvested species, and the state of fisheries globally, in Canada and in BC. In Part 2, we will focus on learning core concepts in population biology and ecology such as age/growth, reproduction, recruitment, and mortality. In Part 3, we will apply these core courses into management models primarily for single species, but with a brief introduction to multispecies and ecosystem management. Students will develop core competencies in the ability to: apply the process of science to management, use quantitative reasoning, basic population modeling, incorporate multidisciplinary aspects of fisheries, communicate your understanding thru exams, exercises, a paper and oral presentation, and ultimately understand relationship between fisheries science and society. Specific skills will include: following detailed instructions, assessing and summarizing scientific information, make measurements from video footage, record and summarize collected data, basic statistical analysis, data visualization, data interpretation, mathematical problem solving, written and oral communication.

Withdrawals and Deferrals

Students are to familiarize themselves with the withdrawal dates in the academic calendar (<https://www.uvic.ca/calendar/dates/>).

Accessibility Statement

Students with diverse learning styles and needs are welcome in this course. In particular, if you have a disability/health consideration that may require accommodations, please feel free to approach me and/or the Centre for Accessible Learning (<https://www.uvic.ca/accessible-learning/index.php>) as soon as possible. The sooner you let us know your needs the quicker we can assist you in achieving your learning goals in this course.

A Note on Plagiarism

Actions such as plagiarism, multiple submissions, falsifying materials used in academic evaluations, cheating, aiding others to cheat, or unauthorized use of an editor violate University policies on academic integrity and are considered serious offences. You must inform yourself about the university regulations (see UVic Policy on Academic Integrity; [see link above](#)).

Academic Integrity and use of Artificial Intelligence

It is expected that all of us, as members of an intellectual community, will adhere to the values of honesty, trust, fairness, respect, and responsibility. Any action that contravenes this standard, including misrepresentation, falsification or deception, undermines the intention and worth of scholarly work and violated the fundamental academic rights of members of our community. You are responsible for creating the entire content of your work. **Plagiarism and other acts against academic integrity, including the use of artificial intelligence software, are serious academic offences, and it is your responsibility to understand the University's policy on academic integrity.** Nothing in this policy is intended to prohibit students from developing their academic skills through the exchange of ideas and the use of resources available to support learning. Please consult <https://www.uvic.ca/students/academics/academic-integrity/index.php> for more information. If you are unsure about the appropriate uses of artificial intelligence as a learning tool for this course, please speak with a member of the instructor team. You may discuss how to solve homework assignments together, but are expected to compute and write your results separately.

Intellectual Property & Materials on the LMS Website

All assignments for this course and all materials posted to the LMS website are the intellectual property of the instructor and the University of Victoria. Do not circulate this material or post it to note-sharing sites without the instructor's permission. Posting course materials to note-sharing sites or otherwise circulating course materials without the permission of the instructor violates the Policy on Academic Integrity (link above). Any evidence that you are circulating materials without permission will be referred to the Chair of the Department of Biology for investigation.

Student conduct

The University of Victoria is committed to promoting critical academic discourse while providing a respectful and supportive learning environment. All members of the university community have the right to this experience and the responsibility to help create such an environment. The University will not tolerate racism, sexualized violence, or any form of discrimination, bullying or harassment. Please be advised that this includes logging into UVic's learning systems or interacting with online resources, and course-related communication platforms, you are engaging in a university activity. All interactions within this environment are subject to the university expectations and policies. Any concerns about student conduct may be reviewed and responded to in accordance with the appropriate university policy. To report concerns about online student conduct: onlineconduct@uvic.ca. Concerns about conduct in lectures should be brought to your instructors.

Mental Health

A note to remind you to take care of yourself. Diminished mental health can interfere with optimal academic performance. Do your best to engage in self-care and maintain a healthy lifestyle this

semester. This will help you achieve your goals and cope with stress. All of us benefit from support during times of struggle. You are not alone. Support services at UVic can be found through The UVic Student Wellness Centre which provides cost-free and confidential mental health services to help you manage personal challenges that impact your emotional or academic well-being.

Academic Supports

The University has a number of academic support services that may help you in this course, including the [Centre for Academic Communication](#), the [Library's Research Support page](#), and the [Library's "Ask Us" service](#). Information about academic supports can also be found through the [University's Learn Anywhere site](#).

Academic Accommodations

The University of Victoria is committed to creating a learning experience that is as accessible as possible. If you anticipate or experience any barriers to learning in this course, please feel welcome to discuss your concerns with me. If you believe you will require academic accommodations to address barriers to your education in this course and you have not already registered with the [Centre for Accessible Learning](#), please [do so](#). The Centre for Accessible Learning is the office designated to arrange for accommodations. You can find information about academic accommodations through the Centre for Accessible Learning's website.

Some Important Administrative Dates

- Tues. Sept 22nd: last day for 100% reduction of fees.
- Fri. Sept 25th: last day for adding first term courses.
- Tues. Oct. 13th: last day for 50% reduction of tuition fees. 100% of tuition fees will be assessed for courses dropped after this date.
- Sat. Oct 31st: last day for withdrawing from first term courses without penalty of failure.

Other Resources

Student Resources

- a. [UVic Learn Anywhere](#). UVic Learn Anywhere is the primary learning resource for students. It offers many learning workshops and resources to help students with academics and learning strategies.
- b. [Library resources](#). Information for students wishing to use the UVic library.
- c. Indigenous [student services](#)
- d. [Centre for Academic Communication](#)
- e. [Learning Strategist Program](#)
- f. [Academic Concessions and Accommodations](#)
- g. Academic accommodation & access for students with disabilities – [Policy AC1205](#)
- h. [Student wellness](#) resources.
- i. [Ombudsperson](#). A resource to help resolve disputes or complaints.
- j. Other [student groups and resources](#).

University Statements and Policies

- a. University Calendar – ["Information for all students"](#)
- b. [Creating a respectful, inclusive and productive learning environment](#)
- c. Tri-faculty [standards for professional behaviour](#)

- d. [Accommodation of Religious Observance](#)
- e. [Student Conduct and Non-Academic Student Misconduct](#)
- f. [Accessibility](#)
- g. [Equity, Diversity, and Inclusion](#)
- h. [Equity and Human Rights](#)
- i. [Sexualized Violence Prevention and Response](#)

Discrimination and Harassment [Policy](#)

University Policy on Human Rights, Equity, and Fairness

According to the Policy on Human Rights, Equity, and Fairness

(https://www.uvic.ca/universitysecretary/assets/docs/policies/GV0200_1105_.pdf), the “University promotes a safe, respectful and supportive learning and working environment for all members of the university community. The University fosters an environment characterized by fairness, openness, equity, and respect for the dignity and diversity of its members. The University strives to be a place that is free of discrimination and harassment, injustice and violence. The strength and vibrancy of the University is found in the diverse life experiences, backgrounds and worldviews of all its members.”

Classroom Conduct and Course Responsibilities

With regard to the learning environment, the University Calendar’s Policy on Creating a Respectful and Positive Learning Environment states that UVic “is committed to promoting critical academic discourse while providing a respectful and productive learning environment. All members of the university community have the right to experience, and the responsibility to help create, such an environment. In any course, the instructor has the primary responsibility for creating a respectful and productive learning environment in a manner consistent with other university policies and regulations.”

In terms of expectations for students, the University Calendar’s Attendance Policy states that “[a]n instructor may refuse a student admission to a lecture, laboratory, online course discussion or learning activity, tutorial or other learning activity set out in the course outline because of lateness, misconduct, inattention or failure to meet the responsibilities of the course set out in the course outline.”

Students engaging in misconduct or failing to meet their course responsibilities can expect a communication from the instructor that outlines the concerning behaviour, explains how such behaviour is disrupting the learning environment, and requests that the student refrain from further disruptive behaviour. Should such instances of misconduct continue, the student will receive a formal request to meet with the Department Chair in order to seek remediation between the parties. If necessary, further procedures to resolve the situation can be found in the Policy on Resolution of Non-Academic Misconduct Allegations (<https://www.uvic.ca/services/studentlife/student-conduct/non-academic-misconduct/index.php>).

Please keep in mind the overlapping policy on [Online Student Conduct](#) specifies standards of behaviour in the online environment.

****Territory Acknowledgement****

I acknowledge with respect the Ləkʷəŋən (Songhees and Esquimalt) Peoples on whose territory the University of Victoria stands, and the Ləkʷəŋən and W̱SÁNEĆ Peoples (including the Tsartlip, Pauquachin, Tsawout, Tseycum and Malahat nations) in whose territories and waters the university operates and whose historical relationships with the land continue to this day.