

BIOL 330 Study Design and Data Analysis Syllabus – Spring 2024

General Course Information

Welcome to BIOL330! This course is an introduction to statistics and study design from a decidedly biological perspective. Our focus is on helping students build the numeracy skills needed to be a productive (and employable) biologist and, most importantly, to develop an intuition for interpreting numbers and data.

Instructors

Dr. David Punzalan (Lectures, and Course Coordination)
Dr. Neville Winchester (Laboratory Coordination)
Dominique Maucieri, PhD Candidate (Laboratory Instructor)
Kévan Rastello, PhD Student (Laboratory Instructor)

Contact Location & Hours

A01 (Lecture) – RSN 133. Tuesday, Wednesday & Friday, 11:30am - 12:20pm
B01 (Lab) - CLE A103. Tuesdays, 2:30-5:30pm
B02 (Lab) - CLE A103. Wednesdays, 2:30-5:30pm
B03 (Lab) – CLE A105. Thursdays, 8:30-11:30am
B04 (Lab) - CLE A035. Thursdays 2:30-5:5:30pm

Intended Learning Outcomes

Upon completing this course, students will be proficient in the use of a subset of statistical tools used in biology, as well as in the interpretation of results of biological studies. Students will be able to execute basic operations used for data analysis and graphical presentation of data using the 'R' environment. Students will be able to make sound inferences from statistical output. Students will be able to generate testable hypotheses, successfully design an observational study, work cooperatively to collect and analyze data, as well as communicate their results in an oral presentation format.

Assessment

You will have the opportunity to demonstrate your progress and proficiency through various forms of evaluation, including:

Lecture	(50%)
Test 1	10%
Test 2	10%
Lecture Final Exam	20%
Brightspace Prep Quizzes	10%
Laboratory	(50%)
Quiz 1	5%
Quiz 2	10%
Quiz 3	10%
Research Project Report	15%
Research Project Presentation	10%

To pass the course, students must:

- 1) Write the final **Lecture** exam
- 2) Complete all Lab quizzes, Research Project Report and Presentation
- 3) Record a grade of 25 points, or greater, out of a possible 50 in the **Laboratory**
- 4) Record a grade of 50 points, or greater, combined across **Lecture** and **Laboratory**

If either 1 or 2 are not completed, the student will automatically fail the course and receive an “N” (‘Incomplete’) on their transcript.

If a student successfully completes 1 and 2 but is not successful in either 2 or 3, they will receive an “F” on their transcript.

About the Instructors

Dave is an evolutionary ecologist, originally hailing from Toronto, Ontario. His love of insect behaviour somehow led him to study evolutionary quantitative genetics, and he is doomed to spend the remainder of his life trying to solve intractable problems surrounding evolutionary constraints and the limits to adaptation. On weekends, he is usually chasing bugs, learning to ID mushrooms, paddleboarding, or foraging in the intertidal.

Dr. Neville Winchester is currently a research entomologist and a member of the teaching staff in the Biological Sciences Department at the University of Victoria. His special areas of research and interest include diversity of arthropods, ancient rainforest ecology and conservation biology. As well as doing research in temperate ecosystems, he has done high canopy work in French Guiana, Gabon, Malaysia, Thailand, Costa Rica, Panama (IBISCA), Ethiopia, and is currently involved in a Peruvian Amazon, Tree of Life project. More on Neville, here: <https://www.uvic.ca/science/home/news/current/winchester-wins-faculty-of-science-award-for-staff-excellence.php>

Dominique is a PhD student in Dr. Amanda Bates’ lab where she studies how heat, hunger and habitat loss affect marine invertebrate communities. She has a love for coding and data analysis, but also all things related to our oceans and bats. When she is not doing research, she will probably be around the ocean tide pooling and scuba diving or baking a loaf of bread.

Kévan is currently pursuing a PhD within the research group led by Dr. Mark Lewis. He is focusing on the application of a bioenergetic approach to model the population dynamics of the Mountain pine beetle (MPB). He is working within the TRIA-FoR project, which aims to improve the effectiveness of risk assessments for the spread of the MPB. He has a great interest in coding, modeling, and entomology. While his code’s running, he plays soccer or tennis.

Contact Info

Lectures and Course Administration:

Dave (davidpunzalan@uvic.ca)

Laboratory (contact the Lab Instructor for your section):

Dominique (dominiquemaucieri@uvic.ca)

Kévan (krastello@uvic.ca)

****please include “BIOL 330” in the subject line of e-mails, and expect a response within 48h.***

Course Website and Materials

- 1) **Course website** on Brightspace (BRS): <https://bright.uvic.ca/d2l/home/297201>
Please check this page regularly for important information and announcements.
- 2) **Lectures** will be delivered in person; electronic (.pdf) versions of the lecture slides and video recordings of (most) sessions will be posted on BRS after class.

- 3) **Lab materials:** there is no lab manual for this course. Labs and research project information will be posted on BRS the week before each lab
- 4) **Required** textbook: Whitlock and Schluter. The Analysis of Biological Data, 3rd edition (either hardcopy or electronic). 2nd edition will suffice (but at your own risk)
- 5) **Recommended:** a laptop for some in-lecture exercises. For labs, students are encouraged to bring their laptops to the lab where they will also have access to a computer terminal.
- 6) **Software:** R and R studio are already on the computers in the lab and detailed instructions to install these on your personal computers will be posted on the Biology 330 BRS page. Microsoft Teams and MS Excel may be required, and may be installed on your personal computer at no cost, via student Microsoft 365:
<https://www.uvic.ca/systems/support/computerssoftware/microsoft365/index.php>
- 7) **Additional R resources:** Lots of R info and script is available online, but you may also find this resource useful—it was made intentionally for UVic students and staff:
<https://gjosgood.github.io/RhandbookUVicBiology.github.io/>

Appendix & Policies

Territory Acknowledgment

The instructors of BIOL330 are grateful to live and work in the unceded territories of the Lekwungen speaking First Nations, and we support the University of Victoria's official territory acknowledgment:

“We acknowledge and respect the ɫəkʷəŋən peoples on whose traditional territory the university stands and the Songhees, Esquimalt and W̱SÁNEĆ peoples whose historical relationships with the land continue to this day.”

Public Health Concerns, Expectations and Policies

We are currently living through a global pandemic in which we have a shared responsibility in maintaining safety in our communities. All staff and students are expected to abide by the guidelines provided by the University of Victoria (<https://www.uvic.ca/covid19/>).

Academic Integrity

The University of Victoria and the Department of Biology take academic integrity (including plagiarism) as a serious matter. Please read this:

https://www.uvic.ca/calendar/undergrad/index.php#/policy/Sk_0xsM_V

All assignments in this course are individual assignments, not group assignments. Failure to comply with this is considered a violation of academic integrity.

Minimum Technology Requirements

Students are responsible for having access to a reliable computer and internet connection.

Refer to the **University's minimum technology requirements for students:** www.uvic.ca/systems/status/features/min-tech-requirements.php

Missed examinations and assignments

You are NOT required to provide a medical note. If a test is missed (with valid reason), contact your instructor immediately. Your instructor may opt to have you write a deferred test or have those grades reallocated to another assessment. If the Lecture Exam is missed, arrangements

must be made to: 1) Write a deferred exam before the end of the exam period, or 2) Request an Academic Concession (<https://www.uvic.ca/students/academics/academic-concessions-accommodations/request-for-academic-concession/index.php>) to write the exam at a later date. For missed laboratory quizzes refer to contact your Lab Instructor/Senior Laboratory Instructor as soon as possible.

Code of Conduct, and Commitment to Equity, Diversity and Inclusion (EDI)

All faculty, staff, and students are expected to treat each other with mutual respect. The course team welcomes students of all backgrounds, regardless of nationality, ethnicity, gender, sexual orientation, religion, age, etc.

Accessibility and special needs

Students with special needs will be welcomed and accommodated, provided those needs are registered through the Centre for Accessible Learning (<https://uvic.ca/services/cal>; phone: 250-472-4947).

Course Grade and Academic Transcript

Grades for all UVic courses are submitted as percentiles. A student's academic transcript will include the percentile grade and a letter grade plus the class average and the number of students registered in the course at the time of the final exam. Percentiles will be rounded to the nearest whole number; a grade of xx.5 will be rounded up. Percentile grades will be converted to letter grades on the student's academic transcript according to the table given below.

A+	90 – 100%	B+	77 – 79%	C+	65 – 69%
A	85 – 89%	B	73 – 76%	C	60 – 64%
A-	80 – 84%	B-	70 – 72%	D	50 – 59%

A grade less than 50% is a failing grade and results in an "F" on your transcript. Failure to complete lab requirements will result in an incomplete grade and an "N" on your transcript.