



BIOL 122 - 101

Physiology of Multicellular Organisms (3 credits)

Winter T2 (2024-25)

TTh 11:00am - 12:30pm, LIB-312

The UBC Okanagan campus is situated on the traditional, ancestral and unceded territory of the Syilx Okanagan Nation and their peoples, who have used this site for millennia to pass on in their culture, history, and traditions from one generation to the next. The relationship between the Syilx Okanagan Nation and UBC Okanagan is an important part of our institution's history, and it's important to respectfully acknowledge that. For more information please see: <https://ok.ubc.ca/about/indigenous-engagement/>

Instructor:

Dr. Matthew K Nelson

SCI 160

Phone: 250-807-9683 (i won't get messages)

matthew.nelson@ubc.ca

<http://www.natureboy.com>

Office Hours: 1:00-2:00pm Tuesday,Thursday

Course Description:

BIOL 122 (3 Credits) (Physiology of multicellular organisms)

Physiological adaptations of plants and animals to their environments. Structure/function relationships of human organ systems. Recommended for Arts or Education students, in conjunction with BIOL 117. BIOL 117/122 cannot be used in place of BIOL 116/125 for those degree programs that require BIOL 116/125. Credit will be granted for either BIOL 117/122 or BIOL 116/125. Credit will be granted for only one of BIOL 122, both of HES 101 and HES 111, or both of HMKN 190 and HMKN 191.[3-0-0]

Prerequisite: BIOL 117 recommended.

Course Overview:

BIOL122 is for non-science majors and is designed for students with no high school biology. It presents a broad overview of cellular and physiological processes in a range of plants and animals with an emphasis on humans. In this course, students are first introduced to the chemical basis of life and the molecules of cells. Students will then study the structure of a cell and cellular processes such as respiration and photosynthesis. The course will explore a variety of topics in animal structure and function including nutrition and digestion, gas exchange, circulation, the immune system, the endocrine system, the reproductive system, the nervous system, the senses and movement. For the plant kingdom, the focus will be on plant structure, growth, nutrition and reproduction.



Learning outcomes:

By the end of this course, students should understand and be able to discuss:

- Describe the cellular and molecular basis of life.
- Describe the physiological adaptations of plants and animals to their environment.
- Explain the functions of the structural components and organelles of cells.
- Compare and contrast the structure of animal and plant cells.
- Explain the pathways by which photosynthesis and cellular respiration provide energy for life.
- Explain the relationship between the diversity of the structure and function of plant cells.
- Explain the process by which plants take up and transport nutrients.
- Describe the mechanisms of reproduction of plants.
- Discuss how the structure of animal cells, tissues and organs relate to their function.
- Explain the human digestive system and the role of the diet.
- Describe the mechanisms of gas exchange and transportation in the human body.
- Explain the structure and function of the human cardiovascular system.
- Describe the different forms of immunity and how malfunction of the immune system leads to disease.
- Describe the role of hormones in maintaining homeostasis in the body.
- Describe the principles underlying human reproduction and development.
- Describe the structure and function of the nervous system.
- Describe the role of muscles and bones in movement.

Course Objectives:

It is the goal of this course to introduce students to fundamental concepts of biology that are important to understand as a human being. Students will develop an understanding of the complexity of plant and animal organisms and the connection between anatomical structures and physiological function.

Course Format:

This course is a standard lecture course. I will, however, use **Canvas** to provide some material that I would like you to read or look at. In these uncertain times, I am also prepared to transition to online delivery should the need arise. (Hopefully this will not be the case.) **Canvas modules** will help guide you through the course material. From time to time I may post supplementary material on ***natureboy.com (this will all be linked to from Canvas)***. **Canvas** and **Canvas mail** will be used to post announcements and to provide course-related material. It is your responsibility to check the Canvas site at least once a week.



Exams will be given in class, in person. Graded material in this course will include two midterms, a final exam, and a term research paper.

Course Evaluation:

Midterm 1	30%	FEB 13
Midterm 2	30%	MAR 18
Final	40%	TBA
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Total	100%	

Final grades will be based on the evaluations listed above and the final grade will be assigned according to the standardized grading system outlined in the UBC Okanagan Calendar.

Required Materials:

Text: Biology: Concepts and Connections, 10th edition REECE, JANE B., TAYLOR, MARTHA R., SIMON, ERIC J., DICKEY, JEAN L., HOGAN, KELLY A., TAYLOR, MARTHA, SIMON, ERIC, DICKEY, JEAN, HOGAN, KELLY, AND REECE, JANE - there are multiple choices available through the bookstore. If you have an earlier edition, that should be fine.

Final Examination:

Students are expected to make themselves available to take final exams at the scheduled times. In the event of an exam clash (i.e., two exams schedule at the exact same date and time) students must inform the instructors as soon as possible, so that alternate arrangements can be made. In the event of an exam hardship (i.e., 3 or more exams that start and end in a 27-hour period, must notify the instructor of the second formal examination no later than one month prior to the examination date for courses in the Winter Session (whether in December for Term 1 or April for Term 2), and no later than two weeks prior to the examination date for courses in the Summer Session. For more information, please see the BC Okanagan Academic calendar, regarding exam clashes and hardships.

Note: Any requests for changes to final exams must be sent to the office of the Associate Dean of Students (bsasdeansoffice.ubco@ubc.ca).

Makeup exams:

If you have to miss an exam, you need to contact me ***as soon as possible*** to let me know what is going on; however, you do not need to email me before you miss. Just let me know by email after the exam (preferably the same day). When you are able to return to class, we will schedule a makeup exam. It is in your best interest not to miss an exam; students rarely do well on makeup exams. **However, if you are sick you should not attend an exam or class.**



Tentative Lecture Schedule:

Date	Topic	Readings
Jan 7	syllabus/introduction	
Jan 9	living things, chemical basis of life	CH 1,2
Jan 14	molecules of cells	CH 3
Jan 16	tour of the cell	CH 4
Jan 21	the working cell	CH 5
Jan 23	energy use in cells	CH 6
Jan 28	photosynthesis	CH 7
Jan 30	plant structure, growth	CH 31
Feb 4	plant reproduction	
Feb 6	plant nutrition	CH 32
Feb 11	intro to animals	CH 20
FEB 13	MIDTERM 1	CH 1-7, 31,32
Feb 17-21	<i>Midterm BREAK</i>	
Feb 25	thermoregulation/osmoregulation	CH 25
Feb 27	nervous system	CH 28
Mar 4	animal nutrition/digestion	CH 21
Mar 6		
Mar 11	gas exchange	CH 22
Mar 13		
Mar 18	MIDTERM 2	CH 20,21,22,25, 28
Mar 20	circulatory system	CH 23
Mar 25	immune system	CH 24
Mar 27		
Apr 1	endocrine system	CH 26
Apr 3		
Apr 8	reproduction	CH 27
TBA	FINAL EXAM	60% ch 23, 24,26,27 40% comprehensive



Missed Assignments and Exams:

From UBC Okanagan Academic Calendar/Policies and Regulations/Academic Concession

“Students who, because of unforeseen events, are absent during the term and are unable to complete tests or other graded work, should normally discuss with their instructors how they can make up for missed work, according to **written guidelines given to them at the start of the course**. Instructors are not required to make allowance for any missed test or incomplete work that is not satisfactorily accounted for. If ill health is an issue, students are encouraged to seek attention from a health professional. Campus Health and Counseling will normally provide documentation only to students who have been seen previously at these offices for treatment or counseling specific to conditions associated with their academic difficulties. Students who feel that requests for consideration have not been dealt with fairly by their instructors may take their concerns first to the Head of the discipline, and if not resolved, to the Office of the Dean. Further information can be found at:

<http://www.calendar.ubc.ca/okanagan/index.cfm?tree=3,48,0,0>.

Grading practices:

Faculties, departments, and schools reserve the right to scale grades in order to maintain equity among sections and conformity to university, faculty, department, or school norms. Students should therefore note that an unofficial grade given by an instructor might be changed by the faculty, department, or school. Grades are not official until they appear on a student's academic record. www.calendar.ubc.ca/okanagan/index.cfm?tree=3,41,90,1014.

www.calendar.ubc.ca/okanagan/index.cfm?tree=3,41,90,1014.

Academic Integrity:

The academic enterprise is founded on honesty, civility, and integrity. As members of this enterprise, all students are expected to know, understand, and follow the codes of conduct regarding academic integrity. At the most basic level, this means submitting only original work done by you and acknowledging all sources of information or ideas and attributing them to others as required. This also means you should not cheat, copy, or mislead others about what is your work. Violations of academic integrity (i.e., misconduct) lead to the break down of the academic enterprise, and therefore serious consequences arise and harsh sanctions are imposed. For example, incidences of plagiarism or cheating may result in a mark of zero on the assignment or exam and more serious consequences may apply if the matter is referred to the President's Advisory Committee on Student Discipline. Careful records are kept in order to monitor and prevent recurrences.

The use of generative AI tools, including ChatGPT and other similar tools, to complete or support the completion of any form of assignment or assessment in this course is not allowed and would be considered academic misconduct.

A more detailed description of academic integrity, including the policies and procedures, may be found at:

<http://okanagan.students.ubc.ca/calendar/index.cfm?tree=3,54,111,0>



If you have any questions about how academic integrity applies to this course, please consult with your professor.

Copyright disclaimer: Diagrams and figures included in lecture presentations adhere to Copyright Guidelines for UBC Faculty, Staff and Students <http://copyright.ubc.ca/requirements/copyright-guidelines/> and UBC Fair Dealing Requirements for Faculty and Staff <http://copyright.ubc.ca/requirements/fair-dealing/>. Some of these figures and images are subject to copyright and will not be posted to **Canvas**. All material uploaded to **Canvas** that contain diagrams and figures are used with permission of the publisher; are in the public domain; are licensed by Creative Commons; meet the permitted terms of use of UBC's library license agreements for electronic items; and/or adhere to the UBC Fair Dealing Requirements for Faculty and Staff. Access to the **Canvas** course site is limited to students currently registered in this course. Under no circumstance are students permitted to provide any other person with means to access this material. Anyone violating these restrictions may be subject to legal action. Permission to electronically record any course materials must be granted by the instructor. Distribution of this material to a third party is forbidden.

Disability Resource Centre

The Disability Resource Centre (DRC) facilitates disability-related accommodations and programming initiatives that ameliorate barriers for students with disabilities and/or ongoing medical conditions. If you require academic accommodations to achieve the objectives of a course, please contact the DRC at:

UNC 215 250.807.8053

Email: drc.questions@ubc.ca

Web: <https://students.ok.ubc.ca/academic-success/disability-resources/>

Equity and Inclusion Office

Through leadership, vision, and collaborative action, the Equity & Inclusion Office (EIO) develops action strategies in support of efforts to embed equity and inclusion in the daily operations across the campus. The EIO provides education and training from cultivating respectful, inclusive spaces and communities to understanding unconscious/implicit bias and its operation within in campus environments. UBC Policy 3 prohibits discrimination and harassment on the basis of BC's Human Rights Code. If you require assistance related to an issue of equity, educational programs, discrimination or harassment please contact the EIO.

UNC 325H 250.807.9291

Email: equity.ubco@ubc.ca

Web: <https://equity.ok.ubc.ca/>

Resources for Indigenous Students:

Indigenous Programs & Services provides community and culturally appropriate services and support to First Nation, Métis, and Inuit Students. You belong here.

The Indigenous Centre, located on the second floor of the University Centre building (UNC 210), provides a sense of belonging and community to First Nations, Métis, and Inuit students. This home away from home is



committed to enriching the quality of the student experience for Indigenous students by promoting access, providing capacity building opportunities, and celebrating success.

Website: <https://students.ok.ubc.ca/indigenous-students/>

Office of the Ombudsperson for Students

The Office of the Ombudsperson for Students is an independent, confidential and impartial resource to ensure students are treated fairly. The Ombuds Office helps students navigate campus-related fairness concerns. They work with UBC community members individually and at the systemic level to ensure students are treated fairly and can learn, work and live in a fair, equitable and respectful environment. Ombuds helps students gain clarity on UBC policies and procedures, explore options, identify next steps, recommend resources, plan strategies and receive objective feedback to promote constructive problem solving. If you require assistance, please feel free to reach out for more information or to arrange an appointment.

UNC 217 250.807.9818

Email: ombuds.office.ok@ubc.ca, Web: www.ombudsoffice.ubc.ca

Student Learning Hub

The Student Learning Hub is your go-to resource for free math, science, writing, and language learning support. The Hub welcomes undergraduate students from all disciplines and year levels to access a range of supports that include **tutoring in math, sciences, languages, and writing, as well as help with academic integrity, study skills and learning strategies**. Students are encouraged to visit often and early to build the skills, strategies and behaviours that are essential to being a confident and independent learner. For more information, please visit the Hub's website.

LIB 237 250.807.8491

Email: learning.hub@ubc.ca

Web: <https://students.ok.ubc.ca/academic-success/learning-hub/>

Student Wellness

At UBC Okanagan health services to students are provided by Student Wellness. Nurses, physicians and counsellors provide health care and counselling related to physical health, emotional/mental health and sexual/reproductive health concerns. As well, health promotion, education and research activities are provided to the campus community. If you require assistance with your health, please contact Student Wellness for more information or to book an appointment.

UNC 337 250.807.9270

Email: healthwellness.okanagan@ubc.ca, Web: <https://students.ok.ubc.ca/health-wellness/>

Students' Union of UBC Okanagan (SUO):

Consisting of a group of elected student representatives, the SUO provides support and advocacy for students.



THE UNIVERSITY OF BRITISH COLUMBIA

SUO Office: Found on the first floor of the UNC building.

Website: <https://www.suo.ca/>

- Indigenous Peoples Collective: <https://www.suo.ca/resource/indigenous-peoples-collective/>
- Pride Resource Centre: <https://www.suo.ca/resource/pride-resource-centre/>
- Women's Resource Centre: <https://www.suo.ca/resource/womens-resource-centre/>
- The UBC Black Caucus: <https://www.instagram.com/ubcblackcaucus/?hl=en>
- African and Caribbean Student Club: <https://www.instagram.com/ubcoacsc/?hl=en>
- UBCO Asian Students Association: <https://www.instagram.com/ubcoasa/?hl=en>
- UBCO Punjabi Student Association: <https://www.instagram.com/psa.ubco/>
- Additional Student Clubs: <https://www.suo.ca/student-associations/>
- Legal Aid: <https://www.suo.ca/services-student-legal-aid/>
- The SUO Food Pantry: <https://www.suo.ca/pantry/>

Independent Investigations Office (IIO):

If you or someone you know has experienced sexual assault or some other form of sexual misconduct by a UBC community member and you want the Independent Investigations Office (IIO) at UBC to investigate, please contact the IIO. Investigations are conducted in a trauma informed, confidential and respectful manner in accordance with the principles of procedural fairness. You can report your experience directly to the IIO (investigationsoffice.ubc.ca):

Email: director.of.investigations@ubc.ca

Telephone: 604.827.2060

SAFEWALK

Don't want to walk alone at night? Not too sure how to get somewhere on campus?

*Call Safewalk at **250-807-8076**.*

For more information, see: <https://security.ok.ubc.ca/safewalk/>