



COURSE OUTLINE

**BIOLOGY 102
PRINCIPLES OF BIOLOGY II**

**45 HOURS Lecture, 45 HOURS Lab
3 CREDITS**

PREPARED BY: _____ DATE: _____
Tara Stehelin, Instructor

APPROVED BY: _____ DATE: _____
Margaret Dumkee, Dean

APPROVED BY ACADEMIC COUNCIL: ()

RENEWED BY ACADEMIC COUNCIL: ()

YUKON COLLEGE

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Course Outline prepared by Tara Stehelin, December 2, 2017.

Yukon College
P.O. Box 2799
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BIOLOGY 102, PRINCIPLES OF BIOLOGY II

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| INSTRUCTOR: Tara Stehelin, B.Sc., M.Sc. | OFFICE HOURS: Friday 11:00 - 12:30, or by appointment |
| OFFICE LOCATION: A2806 | CLASSROOM: Lecture A2402 Lab A2805 |
| E-MAIL: tstehelin@yukoncollege.yk.ca | DATES and TIMES: Lecture Tuesdays and Thursdays 1:00 - 2:30 |
| TELEPHONE: (867) 456-6957 | Labs: Wednesdays OR Fridays 1:00 - 4:00 |

COURSE DESCRIPTION

A continuing introductory course following Bio 101, emphasizing principles of wide application to all living organisms, including processes of cellular reproduction and genetics, patterns of inheritance, molecular biology of genes, animal form and function, plant form and function, plant and animal nutrition, and form and functioning of the major organ and control systems in living organisms, as well as principles of animal behavior. This course is part of core introductory science, transferrable to most Canadian universities as a second-half of a comprehensive first-year level Biology course. A comparative approach to the unity and diversity of organisms is stressed. Mandatory lab sessions reinforce subject matter presented in lectures.

PREREQUISITES

Admission to the Division of Applied Science and Management and successful completion of Bio 101 (C- or higher), or permission of instructor. Math 12 (MATH 060, or equivalent) is recommended as a prerequisite. Students are expected to use basic mathematical skills.

EQUIVALENCY OR TRANSFERABILITY

This course transfers as first-year biology (one semester) to most Canadian Universities

Please see the BC Transfer Guide or contact the School of Science for more information on transferability.

Examples:

UBC with BIOL 101, first-year Biol 111/112/140. (6 credits)

UVIC with BIOL 101, Biol 190A and 190B 210 + 220 (3)

UAF (University of Alaska Fairbanks) Biol 106x (3)

UAS with BIOL 101, Biol 113 (3)

UNBC Biol 100 (3) Yukon Biol 101 & 102 = UNBC Biol 100 (4) & Biol (2) 100L

UR with BIOL 101, Biol 100/101 (6)

TRU (Thompson Rivers University) Biol 1210

TWU with BIOL 101, Biol 113/114

SFU BiSc 102 (3)

UBCO(University of British Columbia Okanagan) With BIOL101, Biol 116/125

UFV (University of the Fraser Valley, formerly University College of the Fraser Valley)
With BIOL 101, Biol 111/112

VIU (Vancouver Island University) with BIOL101, Biol 121/122

LEARNING OUTCOMES

Upon successful completion of the course, students will be able to demonstrate understanding of

- The process and the steps involved of cellular reproduction
- mechanisms by which genetic traits are inherited
- patterns of inheritance and DNA
- physiological divisions of tissue and cell types, as well as an understanding of organ functioning and organs systems in both plants and animals, including immunity, endocrine control in both plants and animals, nervous control, and mechanisms of homeostasis in animals
- animal sensory systems, muscle systems, and
- the ecology and evolution of animal behavior

Upon completion of mandatory lab sessions students will be able to demonstrate patterns of inheritance, complete basic statistical tests on data, and demonstrate knowledge of the following: vertebrate anatomy, principles of immunity, human health, blood components, kidney functioning, animal behavior, and scientific process. Students will also be able to demonstrate hands-on ability and understanding of detailed vertebrate dissection and lab protocol, including safety. Students will also be familiar with components required in a full lab report.

COURSE FORMAT

Material will be presented in two 1.5 hr lectures and one 3 hr lab session per week. Attendance in the laboratory is mandatory. **Students must pass the lab and lecture**

portions independently.

ASSESSMENTS

Attendance and Participation

Attendance is mandatory in labs and greatly encouraged in lectures. Absence from labs results in a zero grade assigned for assignments and quizzes relevant to the missed lab. If the instructor is notified in advance of potential problems with attendance, alternate work may be assigned.

Students must attend the laboratory session assigned to them upon registration, once per week.

Participation

Students are expected to participate actively in laboratory exercises, including taking part in classroom discussions of results of exercises and experiments.

LAB ASSIGNMENTS

Assignments are given during laboratory sessions and graded on the basis of understanding and applying principles involved as well as the correctness of answers to solutions. Most students finish assignments during the lab session, although they are not due until 12:00 noon the next week day. A lab quiz covering material from the previous lab as well as some material from that week's lab will be given each during each scheduled lab (except the first lab) to assess progress. Students are expected to read the material for that day's lab before coming into lab.

Projects

None.

Tests

LECTURE

Quizzes/midterms on lecture material are given approximately once every two weeks. There are 5 quizzes in total, worth 10% each and a final exam worth 15% of the total mark. The final examination will be held at the end of the term and will cover material from the entire course, although it will focus mostly on the last portion of material. The examination date will be announced as soon as confirmed by administration.

LAB

Quizzes on laboratory material are given every lab session (except the first lab) and cover material from the lab exercises the week before and from that day's lab. There is no final lab exam.

EVALUATION

| | |
|--|----------------|
| On lecture material Quizzes (5) 10% each Final exam | 50% 15% |
| On laboratory material Assignments (12) Quizzes (10) | 17.5% 17.5% |
| Total | 100% |

REQUIRED TEXTBOOKS AND MATERIALS

Reece, J. B., L. A. Urry, M. L. Cain, S. A. Wasserman, P. V. Minorsky, B. Jackson, F. Rawle, D. Durnford, C. Moyes, S. Walde and K. Wilson. (2014) *Campbell Biology, 2nd Canadian Edition*. Pearson, Benjamin Cummings
ISBN 978-0-321-77830-7

Available for purchase in the bookstore

Or

“Campbell Biology” 9th or 10th Edition, Reece, Urry, Cain, Wasserman, Minorsky, and Jackson. Pearson Benjamin Cummings

Lab Manual: assembled by instructor and handed out during first lab session.

ACADEMIC AND STUDENT CONDUCT

Information on academic standing and student rights and responsibilities can be found in the Academic Regulations:

http://www.yukoncollege.yk.ca//downloads/Yukon_College_Academic_Regulations_and_Procedures_-_August_2013_final_v1.pdf

PLAGIARISM

Plagiarism is a serious academic offence. Plagiarism occurs when students present the words of someone else as their own. Plagiarism can be the deliberate use of a whole piece of another person’s writing, but more frequently it occurs when students fail to acknowledge and document sources from which they have taken material. Whenever the words, research or ideas of others are directly quoted or paraphrased, they must be documented according to an accepted manuscript style (e.g., APA, CSE, MLA, etc.). Resubmitting a paper which has previously received credit is also considered plagiarism. Students who plagiarize material for assignments will receive a mark of zero (F) on the assignment and may fail the course. Plagiarism may also result in dismissal from a program of

study or the College.

YUKON FIRST NATIONS CORE COMPETENCY

Yukon College recognizes that a greater understanding and awareness of Yukon First Nations history, culture and journey towards self-determination will help to build positive relationships among all Yukon citizens. As a result, to graduate from ANY Yukon College program, you will be required to achieve core competency in knowledge of Yukon First Nations. For details, please see www.yukoncollege.yk.ca/yfnccr.

ACADEMIC ACCOMMODATION

Reasonable accommodations are available for students requiring an academic accommodation to fully participate in this class. These accommodations are available for students with a documented disability, chronic condition or any other grounds specified in section 8.0 of the Yukon College Academic Regulations (available on the Yukon College website). It is the student's responsibility to seek these accommodations. If a student requires an academic accommodation, he/she should contact the Learning Assistance Centre (LAC) at (867) 668-8785 or lassist@yukoncollege.yk.ca.

TOPIC OUTLINE

| WEEK | TOPIC | Chapter | |
|---|--|---------|----------------------|
| Cellular Basis of Reproduction and Inheritance | | | |
| 1 | . cell division, genetic inheritance | 12, 13 | |
| 2 | . Mendelian inheritance | 14 | |
| 3 | . the chromosomal basis of inheritance | 15 | |
| | | | <i>Quiz 1 Jan 18</i> |
| | .the molecular basis of inheritance | 16 | |
| 4 | .from gene to protein | 17 | |
| <hr/> | | | |
| Animal and Plant form and function | | | |
| | . Introduction to plant structure, growth and development (self-study and covered in labs) | 35 | |
| | | | <i>Quiz 2 Feb 1</i> |
| 5 | . Resource transport and gas exchange in plants | 36 | |
| | . Soil and plant nutrition | 37 | |
| 6 | . Basic principles of Animal Form and Function (self-study and covered in labs) | 40 | |
| | | | <i>Quiz 3 Feb 15</i> |
| 7 | . Animal Nutrition | 41 | |

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|---|---|--------------------------------------|
| 8 | . Circulation and Gas Exchange in animals | 42 |
| 9 | . Immune systems of plants and animals | Plants pgs. 905-907 Animals CH 43 |

Reading Week Feb. 19 - 23th

Quiz 4 Mar 8

| | | |
|--|-------------------------------------|-------------------|
| Homeostasis of body fluids, liver, kidney function | | |
| 10 | . Osmoregulation and excretion | 44 |
| 11 | . Hormones and the endocrine system | 45 |
| | . Sex hormones | Pages 1078 - 1084 |
| 12 | . Neurons, nervous system | 48 |
| | . the brain | 49 |
| | . Sensory receptors | 50 |
| | . Muscle function | |
| 13 | . Animal Behavior | 51 |

Last class April 10th
Final Exam (3rd week of April)

LAB TOPICS AND SCHEDULE

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|--------|---|
| Lab 1 | Cellular Reproduction - mitosis and meiosis |
| Lab 2 | Genetics, Mendelian patterns of inheritance using <i>Drosophila</i> , introduction to a basic statistical test, the <i>chi-square</i> |
| Lab 3 | Plant Form and Function |
| Lab 4 | Animal Form and Function-tissues, organs, <i>vertebrate dissection start</i> |
| Lab 5 | Digestive Systems - & <i>introduction to full lab report</i> |
| Lab 6 | Gas Exchange |
| Lab 7 | Liquid Transport |
| Lab 8 | Immune Systems |
| Lab 9 | Homeostasis: osmoregulation and excretion |
| Lab 10 | Nervous and Muscular Systems, the brain |
