

Department of Biology Course Outline

SC/BIOL 1000 3.0 Biology I - Cells, Molecular Biology and Genetics Winter 2020

Course Description

An introduction to major unifying concepts and fundamental principles of biology, including evolution and cell theory. Topics include cells, biological energetics, metabolism, cell division and genetics. The laboratory and lecture components must be passed independently to pass the course. Three lecture hours per week; three laboratory hours in alternate weeks. One term. Three credits.

Prerequisites

OAC Biology or 12U Biology or SC/BIOL 1500 3.00; OAC Chemistry or 12U Chemistry or SC/CHEM 1500 4.00. Course credit exclusions: SC/BIOL 1010 6.00; SC/BIOL 1410 6.00.

Course Instructors and Contact Information

Below are key people who are involved in running the course. Contact us when you need to – we are here to help you succeed.

Course Instructors:

Section M: Dr. Michael Gadsden
Section N: Dr. Christopher Jang

Contact for all Professors*: b1000lec@yorku.ca

Include your Lecture Section in the subject line of your email

Office Hours: Please consult the Moodle Website for your specific lecture section

Course Director: Dr. Christopher Jang

Lecture-related email* (all sections): b1000lec@yorku.ca

Laboratory Director: Dr. Christopher Jang

TA Laboratory Coordinator: Ms. Anna Kotova

Laboratory-related email* (all sections): b1000lab@yorku.ca

First Year Biology Office: 102 Life Sciences Building (LSB)

First Year Biology Program Assistant: Ms. Nalini Doodnauth

How to contact first year program assistant: b1000lec@yorku.ca

**Please see policy on email etiquette below in course policy section before sending an email*

Schedule

Lecture Schedule

Section M: Monday, Wednesday and Friday 8:30am ACW 109 (1 hour lecture)

Section N: Thursday 6pm CLH L (3 hour lecture)

Laboratory Schedule

Laboratory times and places vary by course section and lab section. To find out when and where your labs will be held, please consult the university online course information site for your lab section and the laboratory schedule found in the laboratory manual and on the laboratory Moodle site.

Evaluation

Your final grade will be calculated from the following:

Midterm 1:	20%	Sunday February 9, 2020 (1 hour long)
Midterm 2:	20%	Sunday March 8, 2020 (1 hour long)
Final exam:	35%	Scheduled by Registrar's Office (2.5 hours long)
Activities*	5%	Includes in-class questions/ online quizzes/ other assignments
Laboratory**:	20%	(please note labs are mandatory, even if repeating the course)

****Both lecture and laboratory components must be passed independently to pass the course.****

Midterms and Exams will be multiple choice and short answer questions. Detailed information for these assessments will be provided on the course Moodle site closer to the date of each test.

***Activities** are varied and designed to support your learning. If used properly, they can be a huge help to keep you on track and up to date with text readings, and to help you understand the material, identify what you do not understand, and improve your learning. We use evidence-based teaching strategies, which means you do activities that research has shown are effective for improving and supporting your learning.

Online reading quizzes each week encourage you to do the readings, help you recall what you have read, and prepare you for the week's lectures. In-class "clicker" questions and other in-class activities give you opportunities to recall your knowledge, help you remember information, learn from your peers, test your understanding, identify material you need to work on, and they are fun and engaging!

The activity grade includes points earned from all of the above activities.

- Each reading quiz question is worth one mark. You must get the correct answer to receive each mark.
- Each iClicker question is worth 1 mark. Normally (unless otherwise indicated) you receive 1 mark for each multiple choice question answered, regardless of whether your answer is correct or not. For Short Answer questions, you get 1 mark provided a sincere effort to answer it has been made. Writing "I don't know", "Not Sure", or nonsense will not earn a point.
- The value of any other activities will be provided during lecture.

To calculate the activity grade, the lowest 20% of your activity points (including zeroes) will be dropped from your grade, to account for an occasional missed class (due to illness or other reasons) or for a forgotten/malfunctioning electronic device. So don't worry if you miss a class or forget a quiz, and no need to contact us – the lost points will fall into the 20% that will be dropped.

Note: Final course grades may be adjusted to conform to Program or Faculty grades distribution profiles.

Important Dates

Midterm Test 1 **Sunday February 9, 2020 (1 hour)**

Midterm Test 2 **Sunday March 8, 2020 (1 hour)**

FINAL EXAM: Dates/times/rooms for exams are scheduled and published by the Registrar's Office

Last Day to drop the course without receiving a grade: March 13, 2020

Last Day to withdraw from the course and receive "W" on transcript: April 5, 2020

NOTE: for additional information on withdrawing from a course refer to <http://secretariat-policies.info.yorku.ca/policies/withdrawn-from-course-w-policy-and-guidelines/> For additional important dates such as holidays, refer to the "Important Dates" section of the Registrar's Website at <http://registrar.yorku.ca/enrol/dates/>

Resources

Required Textbooks and Manuals

- "BIOL 1000/BIOL 1001 Custom Biological Science for York University" ISBN 13239584428 (only available in York Bookstore). This textbook is also used for BIOL 1001. This custom text is based on "Biological Science" (Freeman *et al*, Pearson Publishers) 3rd Edition.
- McMillan (2017) "Writing Papers in the Biological Sciences" 6th ed W.H. Freeman.
- BIOL 1000 Fall 2019 Laboratory Manual (only available in York Bookstore)
- Other readings may be assigned during the course and will be made available to you.

iClicker Personal response system – via your own mobile device or computer

- You will need this to participate in in-class questions (part of your activity grade).
- Details regarding how to create an account will be posted on the Lecture Moodle course website – it's free.

Laboratory coat and safety goggles (available in York Bookstore)

- You must bring a laboratory coat and safety goggles to each wet lab (these are labs that occur in LSB 215, 217 and 219). If you lack one or more of these items we cannot permit you to remain in the lab for safety reasons and we cannot offer a makeup lab, so you will receive a zero for that lab.

Course Moodle Sites

<http://moodle.yorku.ca> This course has two Moodle sites – one for lecture and one for lab.

Lecture Moodle Site:

"SC/BIOL1000 - Biology I - Cells, Molecular Biology and Genetics (Winter 2019-2020)"

This site will be used for posting course information including lecture slides, test grades, quizzes, etc. It also contains a Learning Strategies Resource Hub – Visit it often!

Laboratory Moodle Site:

"SC/BIOL1000 A, B, C, D – Biology I – Cells, Molecular Biology and Genetics (LAB Winter 2020)"

This site contains information related to the laboratory component including additional laboratory material and laboratory quizzes. Visit it often!

Learning Outcomes

Upon successful completion of the lecture component, you should be able to:

- Describe and use several effective learning strategies.
- Use biological terminology with correct scientific meaning and appropriate context.
- Explain selection and its role in evolution.
- Describe the cell theory in biology, and relate this theory to other biological concepts.
- Identify key similarities and differences between bacteria, archaea and eukaryotic cells.
- Describe the role of energy in living systems, and how it drives the activities of life.
- Describe the structure and importance of membranes, and different mechanisms of membrane transport.
- Compare and contrast major biochemicals and biochemical pathways (including cellular respiration, photosynthesis, cell signaling).

- Describe the general structures and processes involved in gene expression.
- Compare and contrast different mechanisms regulating gene expression.
- Describe processes of cell division and how the cell cycle works in eukaryotic cells.
- Describe how chromosome movement during meiosis reflects Mendel's principles of independent assortment and segregation.
- Solve Mendelian genetics problems involving one or two genes.
- Demonstrate the relationship between genes, alleles, proteins and phenotype.
- Describe mechanisms that can lead to genetic diversity, identify patterns of inheritance relating to sex linkage, gene linkage, codominance and incomplete dominance.
- Describe basic techniques used in recombinant DNA technology and their significance.

Upon successful completion of the laboratory component of BIOL 1000 3.0, students should be able to:

- Carry out basic biological laboratory activities with safety and reliability in a laboratory setting.
- Develop hypotheses and make predictions for simple biological laboratory experiments
- Design simple experiments and conduct them in a laboratory, including the collection and interpretation of your own data
- Work independently and effectively in a laboratory setting
- Make descriptive observations and critically analyse data
- Prepare clear, appropriately labeled & formatted figures and tables for presentation of biological results.
- Prepare components of a basic biology laboratory report
- Describe what constitutes plagiarism. Prepare written work that abides by principles of academic integrity.
- Work effectively and collegially with others, especially in a laboratory setting.

Course Content

This course introduces you to biological terminology and major concepts that underlie this field. The scope of material is broad, and we encourage you to consider common threads and themes that extend across the various topics. Biology, Environmental Biology and Biochemistry majors will develop a foundation for further study in biology and related areas; all students will develop familiarity with the field and gain skills that can be applied in other courses and settings. This course is intended to help develop the scientific literacy and critical thinking skills required of citizens in modern society.

The laboratory is a key part of this course, as experimentation, observations and communication of biological phenomena are important aspects of "doing" (and understanding) science. The skills gained in the laboratory component will be valuable in future laboratory courses, and often can be applied in other academic or workplace situations.

In addition to learning about biology, this course has been designed to be an experience where you will be actively engaged in lecture material, and have opportunities to reflect on your experience as a learner and develop effective learning strategies. Following a regular 5-stage study cycle, you will have structured, intentional activities for you to participate in before, during, and after class, to help you become successful learners within and beyond BIOL1000. To be successful in the lecture component of this course, you must attend lecture, actively participate, and complete your work *before, during and after class*.

Lecture Topics will include

- Learning Strategies
- Introduction to Evolution
- Molecules of Life
- Bacteria, Archaea and Eukaryotic Cell Structure
- Membrane and Transport
- Energy and Enzymes
- Respiration and Photosynthesis
- Cell Continuity: Mitosis and Meiosis
- DNA Structure and Replication, Gene Expression
- Introduction to Biotechnology
- Genetics

- Cell Communication

Topic-specific learning outcomes are available on the Lecture Moodle Website.

Experiential Education and E-Learning

Experiential Education

- Laboratory work

E-Learning

- Moodle Website
- online quizzes (lecture and lab)
- clickers in the classroom
- supplemental videos and presentations for laboratories
- Mastering Biology (optional)

Other Information

Labs officially start the week of January 13 for all groups 1-8. To determine the group you are in, please see the Laboratory Schedule posted on the lab Moodle website or on pages 1-2 of the lab manual.

You will not attend an in-lab session for lab 1. Lab 1 is conducted on your own, without a lab partner and can be completed at any point until 11:59pm on January 19th.

Please ensure that you have purchased your lab manual (available in the bookstore) and have completed all the pre-lab requirements before your first lab.

The second lab (Lab 2) will be held in the laboratories in the Life Sciences Building and will be the week of January 27th for all groups.

The last day to make permanent lab switches and to enrol in the course is 11:59pm, January 17, 2020.

See the lab manual for schedule details and lab room location.

Copyright Information

Copyright Note: All material associated with this course is the intellectual property of the instructor and/or protected under Canadian copyright law.

All material, including any personal recordings (see Course Policies below) are to be used for personal study purposes only. Unauthorized distribution can lead to a violation under Copyright law.

Course Policies

E-mail Policies and etiquette

We are here to help you. Remember, though, that you already have the answers to most of your questions in the course outline, the lecture and lab Moodle websites, and the lab manual, so before emailing us, consider the nature of your question and first consult the appropriate resources.

Lab-related queries should be directed to the lab email b1000lab@yorku.ca.

Other queries should be sent to b1000lec@yorku.ca.

We will try to respond to email within two working days, but this is not always possible, so please be patient. We may also answer your question in the next class meeting if appropriate. Questions and answers that we deem of interest to the entire class will be posted on the appropriate discussion board or sent via course announcements if urgent.

In order to ensure a prompt answer please follow the following guidelines (*Email messages not meeting these guidelines may not be answered because of insufficient information*):

- Use your @my.yorku.ca email address - email from other sources may be filtered out and not reach the intended recipient.
- SUBJECT LINE - Include the course code and brief indication of topic.
Lecture email example: BIOL1000A – question regarding plasma membrane
Lab email example: BIOL1000C – missed lab 2
- Include your **name** and **student number** at the end of each email. We need it to identify you, retrieve the right information and maintain confidentiality.
- Remember, you are in a professional environment and thus all your written correspondence, including emails, should be professional. This means full sentences, proper grammar, no text message lingo. Please begin your message appropriately: “Dear Professor XXXX”; not “Hey Miss” or “Hey Prof” or “Dude”

Policy for a Missed Midterm 1 or Midterm 2

There are **no** makeup Midterms.

If you miss a Midterm (you are absent from a midterm), for any reason, the weighting will automatically be transferred to the Final Exam. No notification or documentation required. The final exam is cumulative (whole course).

Policy for a Missed Final Exam

- If you miss the final examination you must petition for deferred standing. The decision to grant deferred standing will be made by the appropriate petitions committee and not the instructor. Instructors will not grant deferred standing via a Deferred Standing Agreement Form (DSA).
- See “Deferred Standing Guidelines for Final Exam Only” on the course Moodle site for further details.
- The format of the deferred final exam for this course may be essay, short answer, multiple choice, or a mix of these options.

Discussion Forum Code of Conduct

You are encouraged to participate in the online Moodle forums to discuss course concepts, organize study groups, and ask questions relating to Biology. The discussion on the forums has typically been polite and respectful, and we hope this will continue. To ensure a positive and useful learning environment for everyone, please follow the following code of conduct when using the Moodle forums:

- Check to see if your question has already been posted. (You can search the forums – you don’t have to read each post!) If your question hasn’t already been asked, please post in the most appropriate area. (*E.g.*, if your question is about a lab submission, your post should be in the “Laboratory” forum.)
- Use a clear, informative subject line. Try to be as specific as possible.
- Post comments appropriate to the particular discussion. Off-topic posts may be moved or deleted.
- Be respectful. Posts containing personal insults/ attacks/ intimidation/ profanity will be deleted. (Your instructors read forum posts!). Please follow the York University Student Code of Conduct <http://www.yorku.ca/oscr/codeofrr.html>
- Post only material relevant to BIOL 1000. Other posts will be deleted.
- While it is appropriate to engage in debate/ discourse on biological topics, such discussions should be respectful and evidence-based. Evidence should be from trusted sources – consult with the library if you are not sure! (See: <http://www.yorku.ca/webclass/module4a.html>)
- Any posts that appear to violate our code of conduct may be edited, moved or deleted at the discretion of instructors/moderators. If posts give indications of violations of academic honesty or the York University student code of conduct, further action will be taken.
- If you notice any inappropriate threads please email b1000lec@yorku.ca

Policy for Recording Lectures

Photographs or video recordings of any portion of the lectures (including slides) are not permitted. Images and material presented are subject to Canadian copyright law.

Audio recordings are permitted provided they are used **only** as a personal study aid. They may not be sold, passed on to others or posted online. Remember the lectures are the intellectual property of the professor and cannot be distributed without permission. Lectures can only be recorded from your seat. No recording devices are permitted at the front of the room, including front table(s), the lectern and computer area.

Lecture slides are posted on the website and are for personal use only.

Reappraisal Requests

If you believe that a course evaluation component (e.g. laboratory report or test question) was graded incorrectly, you may request a grade reappraisal for the work. For reappraisals of midterm test material, you must submit a written rationale for the request that is based on academic grounds*, together with the material to be regraded, to the First Year Biology Office (LSB 102) within one week of the material being made available to you. If it is determined that you have provided sufficient academic grounds, the material will be regraded by an instructor.

Note: Regrading can result in the grade being raised, confirmed or lowered.

For reappraisals of laboratory work, please refer to the BIOL 1000 Lab Manual.

**Academic grounds means you make an academic argument for why your answer is correct – statements such as “this grade does not reflect my knowledge” or “I really studied hard and I deserve a better grade” are not academic grounds.*

We appreciate that grades are important to you and all of your classmates. In order to be fair and consistent with regards to the entire class, individual grades are not negotiable. We cannot provide “extra credit” assignments. Marks for assignments and tests will be not “rounded” or “bell-curved”. Contact the Course Director about grades **only** if there is a clear error in your grade (calculation, clerical, etc.) within one week of the test score being made available to you at b1000lec@yorku.ca.

University Policies

Academic Honesty and Integrity

York students are required to maintain the highest standards of academic honesty and they are subject to the Senate Policy on Academic Honesty (<http://secretariat-policies.info.yorku.ca/policies/academic-honesty-senate-policy-on/>). The Policy affirms the responsibility of faculty members to foster acceptable standards of academic conduct and of the student to abide by such standards.

There is also an academic integrity website with comprehensive information about academic honesty and how to find resources at York to help improve students’ research and writing skills, and cope with University life. Students are expected to review the materials on the Academic Integrity website at - <http://www.yorku.ca/academicintegrity/>

Important - A note from the Faculty of Science Committee on Examinations and Academic Standards:

Numerous students in Faculty of Science courses have been charged with academic misconduct when materials they uploaded to third party repository sites (e.g. Course Hero, One Class, etc.) were taken and used by unknown students in later offerings of the course. The Faculty’s Committee on Examinations and Academic Standards (CEAS) found in these cases that the burden of proof in a charge of aiding and abetting had been met, since the uploading students had been found in all cases to be wilfully blind to the reasonable likelihood of supporting plagiarism in this manner. Accordingly, to avoid this risk, students are urged not to upload their work to these sites. Whenever a student submits work obtained through Course Hero or One Class, the submitting student will be charged with plagiarism and the uploading student will be charged with aiding and abetting.

Note also that exams, tests, and other assignments are the copyrighted works of the professor assigning them, whether copyright is overtly claimed or not (i.e. whether the © is used or not). Scanning these documents constitutes copying, which is a breach of Canadian copyright law, and the breach is aggravated when scans are shared or uploaded to third party repository sites.

Access/Disability

York University is committed to principles of respect, inclusion and equality of all persons with disabilities across campus. The University provides services for students with disabilities (including physical, medical, learning and psychiatric disabilities) needing accommodation related to teaching and evaluation methods/materials. These services are made available to students in all Faculties and programs at York University.

Students in need of these services are asked to register with disability services as early as possible to ensure that appropriate academic accommodation can be provided with advance notice. You are encouraged to schedule a time early in the term to meet with each professor to discuss your accommodation needs. Please note that registering with disabilities services and discussing your needs with your professors is necessary to avoid any impediment to receiving the necessary academic accommodations to meet your needs.

Additional information is available at the following websites:

Student Accessibility Services - <https://accessibility.students.yorku.ca/>

York Accessibility Hub - <http://accessibilityhub.info.yorku.ca/>

Religious Observance Accommodation

York University is committed to respecting the religious beliefs and practices of all members of the community, and making accommodations for observances of special significance to adherents. Should any of the dates specified in this syllabus for an in-class test or examination pose such a conflict for you, contact the Course Director within the first three weeks of class. Similarly, should an assignment to be completed in a lab, practicum placement, workshop, etc., scheduled later in the term pose such a conflict, contact the Course director immediately. Please note that to arrange an alternative date or time for an examination scheduled in the formal examination periods (December and April/May), students must complete and submit an [Examination Accommodation Form](#) at least 3 weeks before the exam period begins. The form can be obtained from Student Client Services, Student Services Centre or online at http://www.registrar.yorku.ca/pdf/exam_accommodation.pdf

Student Conduct in Academic Situations

Students and instructors are expected to maintain a professional relationship characterized by courtesy and mutual respect. Moreover, it is the responsibility of the instructor to maintain an appropriate academic atmosphere in the classroom and other academic settings, and the responsibility of the student to cooperate in that endeavour. Further, the instructor is the best person to decide, in the first instance, whether such an atmosphere is present in the class. The policy and procedures governing disruptive and/or harassing behaviour by students in academic situations is available at - <http://secretariat-policies.info.yorku.ca/policies/disruptive-and-or-harassing-behaviour-in-academic-situations-senate-policy/>