

## Department of Biology Course Outline

### SC/BIOL 1000 3.0 Biology I - Cells, Molecular Biology and Genetics Fall 2018

#### 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 A: Dr. Julie Clark  
Section B: Dr. Nicole Nivillac  
Section C: Dr. Yi Sheng  
Section D: Dr. Paula Wilson

##### Contact for all Professors\*: [b1000lec@yorku.ca](mailto:b1000lec@yorku.ca)

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

##### Course Director: Dr. Paula Wilson

Lecture-related email\* (all sections): [b1000lec@yorku.ca](mailto:b1000lec@yorku.ca)

##### Laboratory Director: Dr. Nicole Nivillac

TA Laboratory Coordinator: Amanda Liczner

Laboratory-related email\* (all sections): [b1000lab@yorku.ca](mailto:b1000lab@yorku.ca)

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

First Year Biology Program Assistant: Nalini Doodnauth

How to contact first year program assistant: email [b1000lec@yorku.ca](mailto:b1000lec@yorku.ca)

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

#### Schedule

##### Lecture Schedule

Section A: Monday, Wednesday and Friday 1:30-2:30pm LAS A  
Section B: Monday, Wednesday and Friday 1:30-2:30pm CLH I  
Section C: Wednesday 7:00 – 10:00pm LAS A  
Section D: Monday, Wednesday and Friday 8:30-9:30am ACW 109

## 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 Test 1:	15%	<b>Sunday October 21, 2018. 1:00pm start (1 hour long)</b>
Midterm Test 2:	23%	<b>Sunday November 11, 2018. 1:00pm start (1 hour long)</b>
Final exam:	35%	<b>Scheduled by Registrar's Office (2.5 hours long)</b>
Activities*	5%	Includes in-class questions/ online quizzes/ other assignments
Laboratory**:	22%	(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 website approximately 2 weeks before they are held.

**\*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 October 21, 2018. 1:00pm start (1 hour)**

Midterm Test 2 **Sunday November 11, 2018. 1:00pm start (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: November 9, 2018**

**Last Day to withdraw from the course and receive "W" on transcript: December 4, 2018**

*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**

- Biology I: Cells, Molecular Biology and Genetics Custom Text 2017 or 2018 (only available in York Bookstore) Based on “Biology, Exploring the Diversity of Life” (Nelson Publishers) 3<sup>rd</sup> Edition.
- McMillan (2017) “Writing Papers in the Biological Sciences” 6th ed W.H. Freeman.
- BIOL 1000 Fall 2018 Laboratory Manual (only available in York Bookstore)
- We have requested that a copy of the text be placed on reserve in the Steacie Library.
- 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 (Fall 2018-2019)”

This site will be used for posting course information including lecture slides, test grades, quizzes, etc. Visit it often!

#### **Laboratory Moodle Site:**

“SC/BIOL1000 A, B, C, D – Biology I – Cells, Molecular Biology and Genetics (LAB Fall 2018)”

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

## Learning Outcomes

The course is designed to give you a solid foundation in major concepts in Cell and Molecular Biology and Genetics.

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

- Use biological terminology with correct scientific meaning and appropriate context.
- Explain how light impacts life in different ways.
- 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.
- Develop hypotheses and make predictions for simple biological laboratory experiments
- Design simple experiments and successfully trouble shoot where necessary
- 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.
- Effectively and collegially work with others in the biology laboratory and class 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.

### Lecture Topics will include

- 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

***A detailed Lecture Outline and 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

## Other Information

Labs officially start the week of September 10 for Groups 1-3 and September 17 for Groups 4-6. 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.

*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.*

*Please note that your first lab will be an online lab that you will complete at home by 11:59pm on September 23rd. The second lab (Lab 2) will be held in the laboratories in the Life Sciences Building and will be the week of September 24th for Groups 1-3 and the week of October 1st for Groups 4-6.*

The last day to make permanent lab switches and to enrol in the course is Friday Sept 21, 2018.

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

## 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](mailto:b1000lab@yorku.ca).  
Other queries should be sent to [b1000lec@yorku.ca](mailto: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, **course section** and brief indication of topic.  
Lecture email example: BIOL1000A – question regarding plasma membrane  
Lab email example: BIOL1000C – missed lab 2 because of illness.
- **The course section is critical to ensure the right instructor receives your message.**
- 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”.

### **Policy for a Missed Midterm Test 1 or Midterm Test 2**

What to do if you missed a test:

- You **must** email your instructor at [b1000lec@yorku.ca](mailto:b1000lec@yorku.ca) within two days (48 hours) of missing the test (the sooner the better), and if you are ill, you must see a physician while you are ill, within 24 hours of the missed test, as explained below.
- Valid and appropriately detailed documentation supporting the event (typically medical or emergency related) preventing your attendance must be uploaded to the Department of Biology Document Submission System within seven (7) days of the missed test. The link to the document submission system is available on the Lecture Moodle site. Documentation should cover the date of the missed test.

- Medical (illness) related: You **must** see a physician while you are ill - within 24 hours of the missed test – ideally on the same day - so that the physician can confirm you are too ill to attend the test based on medical examination. If you see the physician when you are not ill, he/she cannot confirm the illness and we will not accept such documentation. Valid documentation for medical situations consists of an “Attending Physician’s Statement” ([July 2017 form only](#)) from the registrar petitions package <http://myacademicrecord.students.yorku.ca/academic-petitions> or letter/document of similar detail. A note that simply says you were seen in the clinic will not be accepted.
- Death of an immediate family member: death certificate or letter from the funeral director.
- Other circumstances: Contact your instructor (b1000lec@yorku.ca) to determine the appropriate documentation required.
- If appropriate documentation is not provided within seven (7) days, a zero will be earned on the missed midterm.
- Not all situations can be accommodated, meaning that a zero may be earned on the missed test. Circumstances not accommodated include, but are not limited to, schedule confusion, sleeping in, missing the bus, personal endeavours (including a job), and busy lives.
- Where appropriate and possible, makeup tests will be scheduled. These may differ in format from the original test (*i.e.*, include more short/long answer questions).

### **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 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 make-up 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](mailto: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/>

### **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:

Counselling & Disability Services - <http://cds.info.yorku.ca/>

Counselling & Disability Services at Glendon - <https://www.glendon.yorku.ca/counselling/>

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](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/>