

## Department of Biology Course Outline

### SC/BIOL 1000 3.0 Biology I - Cells, Molecular Biology and Genetics Fall 2015

#### 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

Course Director: Dr. Paula Wilson

Course Instructors:

Section A: Dr. Paula Wilson

Section B,D: Dr. Nicole Nivillac

Section C: Dr. Yi Sheng

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

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

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

Laboratory Director: Dr. Nicole Nivillac

Laboratory Coordinator: Melanie Goral

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: Dharti Patel

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

#### Schedule

Lecture Schedule

Section A: MWF 13:30-14:30 LAS A

Section B: MWF 13:30-14:30 CLH I

Section C: Thursday 19:00-22:00 LAS A

Section D: MWF 8:30-9:30 ACW 109

Laboratory Schedule: please consult the university online course information site as well as the laboratory schedule found in the laboratory manual. Laboratory times and places vary by course section and lab section.

## Evaluation

Midterm Test 1:	15%	<b>Saturday October 3, 2015. 13:30-14:30</b>
Midterm Test 2:	23%	<b>Sunday November 8, 2015. 13:30-14:30</b>
Final exam:	35%	<b>Scheduled by Registrar's Office</b>
Activities*	5%	Includes clicker questions/quizzes/ other assignments
Laboratory**:	22%	Mandatory, even if repeating the course.

\* Many of the items used in this category will include points for participation/completion. This can include clicker questions, weekly reading quizzes and/or in-class exercises. The lowest 20% of clicker questions/ quizzes (including zeroes) will be dropped from your grade. This is to account for an occasional missed class (e.g., due to illness or other reasons) or for forgotten/ malfunctioning clickers, etc. there

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

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

## Important Dates

Midterm Test 1 **Saturday October 3, 2015. 13:30-14:30**  
Midterm Test 2 **Sunday November 8, 2015. 13:30-14:30**

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, 2015**

*NOTE: for additional important dates such as holidays, refer to the "Important Dates" section of the Registrar's Website at <http://www.yorku.ca/yorkweb/cs.htm>*

## Resources

### **Textbooks and Manuals**

- Biology I: Cells, Molecular Biology and Genetics Custom Text 2015 (only available in York Bookstore) Based on "Biology, Exploring the Diversity of Life" (Nelson Publishers) 3<sup>rd</sup> Edition.
- McMillan (2012) "Writing Papers in the Biological Sciences" 5th ed W.H. Freeman.
- BIOL 1000 Fall 2015 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 students.

### **Clicker (personal response system)**

- Turning Point Clickers will be used in this course. Bring your clicker to every lecture.
- Each student must purchase his or her own clicker. Using a clicker not registered to you (or answering clicker questions for a friend) is considered a breach of Academic Honesty.
- **Turning Point Clickers are purchased through York University Computing Services.** For more information go to <http://www.yorku.ca/prs/index.htm>
  - New clickers are \$42 (charged to your student account) and ordered online with pickup at Scott Library or William Small Centre
  - To purchase go to <http://www.yorku.ca/prs/students/purchase.htm>
- **Register your clicker by September 18, 2015.**
  - Go to <http://www.yorku.ca/prs/students/register.htm>

**Laboratory coat and safety goggles** (available in York Bookstore)

- Students are required to bring a laboratory coat and safety goggles to each wet lab (these are labs that occur in LSB 215, 217 and 219). Students lacking these items will not be permitted to remain in the lab and no makeup will be granted.

**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 2015-2016)

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 (Fall 2015-2016)

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, students 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.
- Describe the importance of membranes, and different mechanisms of membrane transport.
- Relate biological structure and function at the level of the cell, organ, and organism.
- Identify key similarities and differences between prokaryotic and eukaryotic cells.
- Compare and contrast major biochemicals and biochemical pathways (including cellular respiration, photosynthesis, cell signaling).
- Compare and contrast different mechanisms regulating gene expression.
- Describe processes of mitosis 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.
- Describe the relationship between genes, alleles, proteins and phenotype.
- Describe the 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

In this course, you will be introduced to biological terminology and major concepts that underlie this field. While the scope of material in this course is very broad, students are encouraged 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
- Prokaryotic and Eukaryotic Cell Structure
- Membrane, Transport and Cell Communication
- Energy and Enzymes
- Respiration and Photosynthesis
- Cell Continuity: Mitosis and Meiosis
- DNA Structure and Replication, Gene Expression
- Introduction to Biotechnology
- Genetics

***A detailed Lecture Outline and topic-specific learning outcomes are available on the Moodle Course 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

Laboratories Start the week of

- September 14 2015 for Groups 1, 2 and 3
- September 21 2015 for Groups 4, 5 and 6

*See lab manual for schedule details and to determine your group*

### Test Format

The format of tests and exams will be primarily multiple choice questions, with one or more short answer question on one or more test/exam.

## Course Policies

### **E-mail Policies and etiquette**

We will try to respond to email within two working days, but this is not always possible. 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:

- Use your @yorku.ca email address when emailing instructors and others within the university. 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: BIOL1000B – question regarding plasma membrane  
Lab email example: BIOL1000D – missed lab 2 because of illness.
- The course section is critical to ensure the appropriate instructor receives your message.
- **Include your NAME and STUDENT NUMBER at the end of each email.** We work with hundreds of students and the only way we can access your course information is via your student number.
- 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!”.
- Before emailing the instructor, consider the nature of your question and whether another resource should be consulted first. For example, most of the information you need is in this outline or posted on the course website. Lab-related queries should be directed to the lab coordinator.

### **Policy for a Missed Midterm 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).
- Valid and appropriately detailed documentation supporting the events (typically medical or emergency related) preventing your attendance must be submitted to the First Year Biology Office (LSB 102) within seven (7) days of the missed test. 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” from the registrar petitions package [http://www.registrar.yorku.ca/pdf/petitions/petition\\_package.pdf](http://www.registrar.yorku.ca/pdf/petitions/petition_package.pdf) 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](mailto: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 will 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**

- Students who miss the final examination must petition for deferred standing. In this way, the decision to grant deferred standing will be made by the appropriate committee and not the instructor. No student will be granted deferred standing by the instructor 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, and/or multiple choice.

### **Discussion Forum Code of Conduct**

Students 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. Students are expected to 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. (It is also worth remembering that 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](mailto: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.

### **Reappraisal Requests**

If you believe that a course evaluation component (eg 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.*

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 not be "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)

### 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 - <http://www.glendon.yorku.ca/counselling/personal.html>

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

### Ethics Review Process

York students are subject to the York University *Policy for the Ethics Review Process for Research Involving Human Participants*. In particular, students proposing to undertake research involving human participants (e.g., interviewing the director of a company or government agency, having students complete a questionnaire, etc.) are required to submit an *Application for Ethical Approval of Research Involving Human Participants* at least one month before you plan to begin the research. If you are in doubt as to whether this requirement applies to you, contact your Course Director immediately.

### 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 an Examination Accommodation Form, which 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) (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/>