Department of Biology Course Outline

SC/BIOL 1001 3.0 Biology II – Evolution, Ecology, Biodiversity & Conservation
Winter 2020

Course Description

A continuation of Biology I, exploring major unifying concepts and fundamental principles of biology, building on earlier concepts. Topics include mechanisms of evolution, ecology, a survey of biodiversity and conservation biology. **The laboratory and lecture components must be passed independently to pass the course.** Three lecture hours per week; three laboratory hours in approximately alternate weeks. One term. Three credits.

Prerequisites

SC/BIOL 1000 3.00; Course credit exclusions: SC/BIOL 1010 6.0, SC/BIOL 1410 6.00

Course Instructors and Contact Information

Course Director: Dr. Tamara Kelly

Course Instructors:

Section M: Dr. Tamara Kelly
Section N: Dr. Birgit Schwarz
Section O: Dr. Mark Vicari
Section P: Dr. Alex Mills

Contact email for all Professors*: b1001lec@yorku.ca

- Please put your section in the subject line.

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

Laboratory Director: Dr. Mark Vicari
Laboratory Coordinator: Melissa Galicia

Laboratory-related email* (all sections): b1001lab@yorku.ca

First Year Biology Office: 102 Life Sciences Building (LSB)
First Year Biology Program Assistant: Nalini Doodnauth

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

Schedule

Lecture Schedule

Section M: Mon./Wed./Fri. 13:30-14:30 LAS A
Section N: Mon./Wed./Fri. 13:30-14:30 CLH L
Section O: Wed. 19:00-22:00 LAS A
Section P: Mon./Wed./Fri. 8:30-9:30 ACE 102

Laboratory Schedule: Please consult the university online course information site as well as the laboratory schedule found on the laboratory Moodle site. Laboratory times and places vary by course section and lab section.

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

Evaluation

Midterm Test 1:	15-25†%	**Sunday Feb. 9, 2020, 1:30 – 3:15 pm**; two-stage
Midterm Test 2:	15-25†%	**Sunday Mar. 8, 2020, 1:30 – 3:15 pm**; two-stage
Final exam:	30%	**Final exam period, scheduled by Registrar's Office**; two-stage**^**
Activities (clickers, etc)*	5%	Throughout term; Includes clicker questions, worksheets, etc.
Quizzes**	3%	Throughout term
Laboratory:**	22%	Mandatory, even if repeating the course.

† The midterm with the higher score will have a weight of 25%, while the midterm with the lower score will be weighted at 15%).

- **Midterms are mostly multiple choice, but will contain some short answer questions.** Midterms will be held Sunday afternoons from 1:30-3:15 pm. The April exam will include cumulative questions and will be 180 minutes long. Dates/times/rooms for April exams are scheduled and published by the Registrar's Office (RO); instructors find out when the exams are the same day you do. **You must write midterms and the final exam for the section in which you are registered.**
- Midterms are **two-stage exams**, in which Stage 1 is an individual exam, and Stage 2 is a group exam. Stage 1 is weighted as 85%, and Stage 2 is 15%. **If Stage 1 grade > Stage 2, Stage 1 will count for 100% of the test grade.** The final exam will be two-stage **^**if we have permission from Registrar's Office.
  - If you are registered with Alternate Exams, please let your instructor know via email by **Jan. 13.**
  - There are **no** makeup midterms. If you miss a midterm the other midterm will automatically have a weight of 20%; the remaining weighting (+20%) will be transferred to the final exam. **You must write at least one midterm** to be eligible to write the final exam.

*****Many of the items (clicker questions, worksheets, online activities) used in this category will include points for participation/completion. The lowest 20% of questions (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 malfunctioning clickers, etc.

****Pre-class preparation quizzes:** will consist of ~ 5 to 15 questions related to the pre-class readings/videos that you are expected to complete prior to class. Quiz points are awarded based on correctness. The lowest 20% of questions (including zeroes) will be dropped from your grade. This is to account for missed/forgotten quizzes, technical issues, etc.

****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 policies for grades distribution profiles.

Important Dates

LABS START THE WEEK OF

- Jan. 6 for Group 9
- Jan. 13 for Groups 1, 2, 3, and 4
- Jan. 20 for Groups 5, 6, 7, and 8

See lab schedule on the Moodle lab site for schedule details and to determine your group number

The last day to switch labs:

- **Sections M & N is Jan. 13, 11 am. No switches in these sections will be allowed after that time.**
- **Sections O & P is Jan. 20, 11 am. No switches in these sections will be allowed after that time.**

MIDTERMS & EXAMS

- Midterm Test 1: **Sunday Feb. 9, 2020, 1:30 – 3:15 pm**
- Midterm Test 2: **Sunday Mar. 8, 2020, 1:30 – 3:15 pm**
- 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

For additional important dates such as holidays, refer to the "Important Dates" section of the Registrar's Website.

Resources

This includes material designed for use as part of SC/BIOL 1001 3.0 at York University and is the property of the instructor unless otherwise stated. Third party copyrighted materials (such as book chapters and articles) have either been licensed for use in this course or fall under an exception or limitation in Canadian Copyright law.
Copying this material for distribution (e.g. uploading material to a commercial third-party website) is a violation of Copyright law.

Textbooks and Other Materials

Required text:

- BIOL 1000/1001 Custom text for York University (based on 3rd Cdn edition, Pearson) (jellyfish cover).

OR

- Freeman *et al.* 2018. Custom edition of 'Biological Sciences', 3rd Cdn edition, Pearson (forest stream on cover)
  - (Copies of text are available on short-term reserve at Steacie Library.)
  - Students are expected to read relevant sections of the text/other assigned readings prior to class or lab. There will be short quizzes completed on Moodle, based on these readings.
- **Required:** BIOL 1001 Winter 2020 SimBio activation key for 3 online labs. Activation key can be purchased as a) a voucher from the York Bookstore OR b) directly from SimBio (online) using a credit card.
- Other readings may be assigned during the course and will be made available to students.

Clicker (personal response system) – FREE (do not purchase!)

- You must register with iClicker to receive marks for the quizzes and in-class activities. Activities include clicker questions, worksheets, minute papers/reflection questions (both in-class and online), as well as surveys etc. These are opportunities to determine or reflect on what you know such that it can guide your studying.
- **If you do not have your own device, you can sign one out from one of the York Libraries (https://www.library.yorku.ca/web/technology-lending/) or from Lisa Caines Ogini in 1050 Dahdaleh (lcaines@yorku.ca)**

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, 219, and 221). Students lacking these items will not be permitted to remain in the lab and no makeup lab 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:** course information (*e.g.,* lecture slides, test grades, quizzes). Visit often for updates.
- **Lab Moodle site:** information related to the lab component, including additional lab materials and quizzes. Visit it often for updates.

Learning Outcomes

Upon successful completion of the lecture component, students will be able to:

- Relate concepts from BIOL 1000 to those in BIOL 1001.
- Use the process of scientific inquiry to make effective decisions/arguments about real-world biological issues, including assessment of information in the media using scientific reasoning.
- Describe the nature of science, how scientific knowledge is iterative and cumulative, the process by which scientific knowledge comes to be accepted as valid, including the roles of prediction, evidence, consensus, and authority and what is, and is not, appropriate subject matter to scientific study.
- Explain and illustrate the predictive power of scientific theories and how acceptance or rejection of hypotheses takes place.
- Use proper biological terminology with correct scientific meaning and appropriate context.
- Explain, in basic terms, how evolution (via mechanisms not limited to natural selection) shapes life on Earth, the necessity of genetic variation (*e.g.,* through mutation), and how many behavioural traits are adaptive.

- Describe how populations can change over time and space through intraspecific interactions and environmental constraints.
- Describe the history of evolutionary thought, and the evidence for evolution and the common ancestry of life.
- Explain how phylogenetics is used to generate hypotheses about the history of life on Earth.
- Describe the mechanisms by which speciation can occur, difficulties in assigning a universal definition of the term 'species', and why the term can vary between groups of organisms.
- Describe the different factors that can influence population growth, explaining differences in their effects.
- Describe how interspecific interactions can shape populations and the communities these populations comprise.
- Relate conservation plans with evolutionary processes and population dynamics.
- Describe how energy and matter flow and/or are recycled in ecosystems, and how ecosystems may change over time due to natural or human-induced processes.

Upon successful completion of the lab component of BIOL 1001 3.0, students will be able to:

- Carry out basic biological laboratory activities with safety and reliability.
- Develop hypotheses and make predictions in a variety of simple biological laboratory experiments (real or simulated).
- Make descriptive observations of biological specimens (via microscope and/or eye).
- Prepare clear, appropriately labelled and formatted figures and tables for presentation of results from biology experiments (real or simulated).
- Perform basic literature searches and find library resources relating to biological topics.
- Organize and display multiple references in a requested format (relating to an acceptable biological journal)
- Describe what constitutes plagiarism.
- Prepare written work that paraphrases (and cites) reference sources appropriately (and otherwise abide by principles of academic integrity).
- Effectively and collegially work with others in the biology laboratory and class setting.

Course Content

In this course, you are introduced to biological terminology and major concepts that underlie this field and continue to develop a foundation for further courses/work in biology and related areas. 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, including those presented in BIOL 1000. This course is intended to help develop scientific literacy and critical thinking skills required of citizens in modern society.

Introductory survey courses often seem to be composed of a huge set of known, static facts, but the science of Biology (and other areas) is ***dynamic, questioning, and continually changing over time***. In science, we are constantly challenging existing hypotheses and models through experimentation as new observations are made. Our role as instructors is to provide you with multiple learning opportunities in an environment that challenges you, and to encourage you to ask questions. Thus, you should feel comfortable asking questions in class and in the laboratory. We may not always be able to answer your questions, but we can usually help you find out more. Asking questions is an important skill in science (and it's always good to practise!). We also encourage you to seek answers to your questions on your own—another important skill to practise! **You are expected to complete the required readings and online work prior to class time. As in all courses, students are expected to spend time beyond the regular course hours in preparation, review, studying, etc., related to the course.**

Lecture Topics include:

- Nature of Science
- Mechanisms of Evolution (incorporates genetics from BIOL 1000)
- Macroevolution
- Phylogenetics
- Human Evolution Ecology
- Ecology
- Conservation Biology

Topic-specific learning outcomes are available on Moodle.

The **lab** is a key part of this course, as experimentation, observations and communication of biological phenomena are important aspects of doing, and understanding, science.

Experiential Education and E-Learning

E-Learning: online quizzes (both lecture and lab), in-class clickers & worksheets, supplemental videos

Experiential Education: Lab work, teamwork in class and in labs!

Other Information

See Moodle: *Recommendations for Success* for tips on how to do well!

Course Policies

We know that this part might seem really boring, but it's VERY important that you read it ahead of time so that you are familiar with policies now rather than after the fact.

1. **E-MAIL ETIQUETTE:**
   - Email b1001lec@yorku.ca to contact your professor; for the Lab Director/Coordinator email b1001lab@yorku.ca
   - **Subject line: your section (M/N/O/P),** your name, student number, and a brief indication of topic (*e.g.,* 'Question regarding natural selection'). We receive a lot of email and this practise helps us sort emails efficiently. **Emails without the required information will not receive a response.**
   - **Include your NAME at the end of each email.** It's just polite and it helps us know which name you would like to be addressed by.
   - **Remember, you are in a professional environment,** and thus all your written correspondence, including emails, should be professionally conducted.
   - Please allow 48 hours (2 work days) to respond.
   - Before emailing your instructor, **consider the nature of your question and whether another resource should be consulted first**. For example, lab-related queries should be directed to the Lab Director/Coordinator/TA. **Don't be surprised if you don't receive a response to a question that could be easily answered by looking at the Course Outline or the Moodle site.** Also, don't write to the instructor to ask what you missed in class—ask classmates instead.
   - If you have a question that is long and convoluted, then attend your instructor's drop-in hours. Many questions can't be answered adequately via email, so don't be surprised if your instructor suggests coming by during drop-in hours.
2. **ACCOMMODATIONS:**
   - **Submit CDS Accommodation letters to the Course Director by January 13, 2020 via the Document Submission site.**
   - **If you are writing with Alt Exams:** because we're using 2-stage tests, this means you'll need to be back in our classroom in time for the group part of the exam. Typically, the individual part is 50-55 minutes, so you should schedule with Alt Exams accordingly.
   - Please make the instructors (and Lab Coordinator if labs are affected) aware of any **religious observance conflicts** by communicating with b1001lec@yorku.ca (or b1001lab@yorku.ca for labs) at least three weeks in advance of the conflict.
   - If you feel that there are extenuating circumstances that may interfere with their ability to successfully complete the course requirements are encouraged to discuss the matter with your section Instructor as soon as possible.
   - **Please note:** "Senate policy states that students are expected to monitor their progress in courses, taking into account their personal and academic circumstances, and to make the necessary adjustments to their workload to meet the requirements and deadlines." (from Senate Policy of Students' Responsibilities in the Petition/Appeal Processes). **The drop deadline is March 13, 2020.**
   - Students with who require reasonable accommodations in resources or evaluation methods are encouraged to consult with the Student Accessibility Services & ensure that requests for appropriate accommodations are arranged with the me early in the term.
3. **MISSED MIDTERMS/FINAL:**
   - If you are ill, do not enter the exam room; **once you have written an exam, your mark will stand regardless of the reason you may have once the exam is over**.

- There are **no** makeup midterms; if you miss a midterm (you're absent on that day), the weighting will automatically be transferred to the Final Exam, which is cumulative. No documentation is required.
- **You must write one of the two midterms in order to be eligible to write the final exam.**
- **If you miss the FINAL EXAM** you must email us within 2 days of the final exam, submit a DSA to the Undergraduate Biology Office within one week of the missed exam, and petition your home faculty for deferred standing. It is the Petition Committee's decision whether deferred standing is granted; if it is, the committee will set the deadline for writing the deferred exam. Denied petitions will result in a zero on the final exam.
    - The format of the make-up final exam can differ from the original final exam format.

4. **ACTIVITIES (in-class and online):**
- You must register for iClicker (REEF) to receive marks for the clicker questions; bring a web-enabled device to each class and **please make sure it's charged before class** as there are limited outlets in our lecture hall.
- **You must use your own iClicker account. Use of an account not registered to you is considered a breach of Academic Honesty & will be reported.**
- Clicker questions, worksheet, & discussion marks are gained on the basis of participation. Because the nature of this clicker/worksheet/etc. marking scheme considers missed classes and technical glitches (by dropping the lowest 20%), doctor's notes, etc., will **NOT** be accepted for missed classes.
- Clicker questions are worth 5 points per day (you must complete 75% of the questions to get the day's 5 points). Worksheets are worth 5 points each. **Take a deep breath; missing one class is unlikely to affect your grade.**

5. PRE-CLASS PREPARATION QUIZZES:
- Quizzes will occur approximately weekly and will be based on pre-class readings/video lectures to prepare you for the upcoming week of classes, however, some review questions may be included.
- Marks are awarded for quizzes on the basis of a correct answer.
- You have a limited amount of time in which to complete the quiz. Please note the deadline for the quizzes (different depending on section). If you are completing a quiz when the deadline passes, you will receive no marks for that quiz.
- Because of the marking scheme you need only earn 80% of the total number of quiz points to earn the full quiz component; thus documentation, etc., will not be considered. **Missing one quiz is unlikely to have a large impact on your grade.** Students encountering longer-term medical issues (*e.g.,* in the hospital for greater than a few days) should contact their section instructor as soon as possible.
- If you are having issues with a quiz (can't see questions), please check your browser settings (particularly if you have done a software update).

6. MIDTERM/EXAM MARKS & REVIEWING EXAMS:
- Exams in this course are the two-stage format, which you may have had in BIOL 1000, and marking typically takes at least ~ 2 weeks. Even for multiple choice questions, answers must be reviewed. Posting impatient remarks (in email, forums, etc.) about exam marks doesn't make the process move any faster. Marks will be posted in Moodle. Exam marks are not negotiable. Please see #7 if you think there has been an error in your exam mark calculation.
- Exams will not be handed back to students, but **you will have opportunities to review your exams**. These dates will be posted on Moodle. If you have a concern about marking of a short-answer question, please see #7.

7. **REGRADING/MARK CALCULATION ERRORS:**
- If you think a written answer on a test was marked incorrectly you must submit a written rationale (based on academic merit) to 102 LSB (Undergraduate Biology Office) within 2 days of viewing your exam. **NOTE: re-marking can result in the mark being raised, confirmed, or lowered.**
- To be fair and consistent with regard to the entire class, **individual grades are NOT negotiable**. We cannot provide 'extra credit' assignments. Marks for assignments and tests are not 'rounded' or 'bell-curved'. **Contact the section instructor about marks ONLY if there is a clear error in your mark (calculation, clerical, etc.).** It is highly unlikely that you will receive a response regarding any other mark-related queries.
- For information on lab assignment reappraisals, please see the BIOL 1001 Lab Polices on the Lab Moodle site.

8. **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. You are expected to follow these guidelines while using the Moodle forums:
     i. Before posting a question, **read other threads** to see if your question has already been answered. (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 forum. (*E.g.,* questions about a lab submission, should be in the "Lab" forum.) Posts put in the inappropriate forum will be deleted.
     ii. **Use a clear, informative subject line.** Try to be as specific as possible.
     iii. Post comments appropriate to the particular discussion. Off-topic posts may be moved or deleted.
     iv. **Be respectful**: your instructors have provided this space for you to discuss course material with your classmates. Posts containing personal insults/attacks/intimidation/inappropriate language/profanity will be removed. (**It is worth remembering that your instructors read forum posts!**) Please follow the York University Student Code of Rights & Responsibilities.
     v. Post only material relevant to BIOL 1001/Biology. Other posts are likely to be deleted.
     vi. 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 or your instructor if you are not sure. (See: http://www.yorku.ca/webclass/module4a.html)
     vii. Any posts that appear to violate our code of conduct may be edited, moved to a hidden forum, 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 contact your Course section Instructor.

     Disclaimer: While Moodle moderators/instructors will attempt to remove/edit objectionable/inappropriate material as quickly as possible, it is not always possible to review every post in a timely manner. Forum posts express the views and opinions of the post's author and not the moderators/instructors (except for posts by these people) and they cannot be held liable.

9. **LAB POLICIES & FORMAT:**
   - Students must follow lab policies outlined on the Lab Moodle site and those discussed above. Students are expected to read these policies, and sign the laboratory code of conduct agreement before the first lab session.
   - There is pre and post work to be completed for most labs. You must check the lab schedule for more information and be prepared for each lab.

10. ACADEMIC INTEGRITY:
   - Students are expected to be familiar with and follow York University's policies regarding academic integrity. Please consult the Lab Moodle site and https://spark.library.yorku.ca/academic-integrity-what-is-academic-integrity/ for more details.

11. RECORDING LECTURES:
   - **Photographs or video recordings of any portions of the lectures (including the slides) are PROHIBITED. Images and material presented are subject to Canadian copyright law.**
   - **Each section instructor will record their lectures, but be aware that technical issues do arise!** These recordings are allowed **ONLY** as a personal study aid & are **NOT** allowed to be sold, passed onto others, or posted elsewhere online. **Lectures are the intellectual property of the professor & cannot be distributed without permission.**
   - If your professor doesn't record lectures, you must ask your instructor if audio recordings are permitted in their classroom. If allowed, audio recordings are permitted provided they are used **ONLY** as a personal study aid, and are **NOT** sold, passed on to others, or posted online. Lectures are the intellectual property of the professor and cannot be distributed without permission.

**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.*

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. 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.

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 willfully 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 Counselling and Development
Counselling (Glendon)
York Accessibility Hub

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.

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. Click here for the policy and procedures governing disruptive and/or harassing behaviour by students in academic situations.

We wish you great success in BIOL 1001! If you need any help, please contact the appropriate individual.