

BIO A01H3 F

Life on Earth: Unifying Principles

Fall 2019 - COURSE SYLLABUS

Objectives and Outcomes

The primary goal of BIO A01 is to provide students with the strong foundation needed to become a successful biologist. During the term you will learn:

1. the fundamentals of evolution, speciation and population genetics, the major principles of cellular organization and metabolic processes, and the principles of gene action and inheritance;
2. the essential skills to become an active learner of science;
3. some basic laboratory techniques that are required to pursue your chosen field of science;
4. some approaches for finding and reading relevant biology research articles;
5. the proper approach to collecting and analyzing data and then communicating the results using the writing and critical thinking skills presented in labs

Overview

BIO A01 is a lecture and laboratory course designed to encourage students to think broadly and critically about some major areas of study in Biology (eg. Evolutionary Biology, Cell Biology and Genetics). BIO A01 consists of 36 lectures (3 x 50 minute lectures per week) and six labs (one self directed lab and five 3-hour lab practicals every two weeks throughout the term).

There are **three modules** consisting of 12 lectures per module. The **first module** will examine evolution as the framework in modern biology, and topics such as population, genetics, cladistics and speciation. The **second module** of the course will introduce students to cell structure and then explore the principles of energetics and cellular metabolism, using respiratory and photosynthetic pathways as two important examples. The **third module** will focus on the role of the nucleus in cellular function, cell proliferation and inheritance and examine processes including DNA synthesis, protein synthesis, cell division (mitosis, meiosis) and genetic principles. An appreciation for the diversity of life is emphasized throughout this course with emphasis on prokaryotes, viruses/prions and protists.

The schedule and location for these lectures and lab practicals can be found in this syllabus.

Course Personnel

Name	Title	How to contact ¹	Office and Office Hours ²
Dr. Scott MacIvor	Instructor – Module 1	E-mail: biolife@utsc.utoronto.ca (include MacIvor in subject)	SY364
Dr. Shelley Brunt	Instructor – Module 2	E-mail: biolife@utsc.utoronto.ca (include Brunt in subject)	SW563A
Dr. Aarthi Ashok	Instructor – Module 3	E-mail: biolife@utsc.utoronto.ca (include Ashok in subject)	SW521D
Vania Branker and Karolyn Keir	Lab/Course Coordinators for BIO A01 - contact regarding late enrollment, missed tests or labs, marks management and general advising as related to the course	E-mail: biolife@utsc.utoronto.ca (include Coordinator in subject) ³	SW238 Hours: TU 2-3pm TH 2-3pm or by appointment
Nicole Alber	BIO Help TA	nikki.alber@utoronto.ca (include Biohelp in subject)	Please see Quercus
	Laboratory TA	TBA in your first lab	

¹All e-mails must be sent from your University – issued e-mail account (@mail.utoronto.ca)

²All Course Personnel are only available in their offices during stated office hours. Office hours for course instructors will be posted on Quercus.

³Course Coordinators will only respond to e-mails during regular business hours (Mon – Fri, 9am – 5pm)

Communication within BIO A01

Quercus (q.utoronto.ca)

The main source of information for BIO A01 is the Quercus course page. Information such as contact information and office hours, lecture outlines, videos and notes, assignment instructions, test dates and locations, and grades will be posted on Quercus throughout the semester. Information related to your lab practical will also be posted here. Please check the BIO A01 Quercus page frequently and set notifications so you do not miss any important information.

Log onto Quercus by clicking the “Quercus” link under Quick Links on the UTSC homepage and using your UTORid and password.

E-mail

To help your professors stay organized and answer your e-mails more quickly and effectively, one central e-mail address serves BIO A01. To communicate with your Instructors and the Course Coordinator, please e-mail:

biolife@utsc.utoronto.ca

Include the name of the person you wish to e-mail, and your student number in the subject line of the e-mail to help direct it. **If there is no name listed in the subject line, your e-mail will not be answered.**

Please do not use professors' e-mail addresses for BIO A01 communication!

Remember to always contact the Instructors, Course Coordinator and TAs using your UofT issued e-mail address. E-mails from other addresses (@gmail, @hotmail, @yahoo, etc.) will not be answered.

Required course materials:

1) Textbook

The complete textbook package can be purchased at the UTSC Bookstore (located above Tim Horton's in the Bladen Wing). The purchase of a textbook is required for BIO A01.

The textbook for BIO A01 is:

Morris J, Hartl D, Knoll A, Lue R, Michael M. 2019. *Biology How Life Works* (3rd ed.) W.H. Freeman & Company: Macmillan Education Imprint.

2) LaunchPad Access (online learning tool)

LaunchPad is an additional, online learning tool to help you master the material presented in BIO A01, as well as complete the online assessments associated with each module. You can purchase and access LaunchPad a few different ways:

- Packaged at no extra cost with the loose-leaf text (approx. \$138.00) or hard-cover text (approx. \$205.35) purchased through the UTSC Bookstore
- As a stand-alone item that includes the e-text for \$88.99. This can either be purchased through the UTSC Bookstore website or directly through the MacMillan website (<http://www.macmillanlearning.com/catalog>)

For technical support, please call: 1-800-936-6899

3) Lab Manual

This lab manual is a separate publication that is required for all lab practicals:

Keir K, Gladilina E, Armstrong C. 2019. *BIO A01 – Life on Earth: Unifying Principles – Lab Manual for Fall 2019*. Toronto, Ontario.

The lab manual is for sale at the UTSC Bookstore. Photocopies of old, now out-of-date manuals are NOT ACCEPTABLE. Reports at the end of each lab for 2019 are unique to this version of the manual and originals are required to receive credit for your practicals. **Copies of reports will not be provided by your TA!**

Students must have their own copy of the appropriate lab information when they come to their practical. It is the responsibility of each student to read each lab in advance and bring the manual to each of their scheduled practicals.

4) Lab Coat and Protective Eyewear

Lab coats and protective eyewear are required for all biology labs at UTSC. Lab coats and protective eyewear are sold in various locations on campus (BioSA, EPSA, Bookstore). Disposable gloves and other supplies will be provided in the labs as needed. Students should bring pencils, pens, rulers and calculators to all labs. Always check your lab manual for any special requirements for each of your labs.

Course Evaluation

The content in BIO A01 will be delivered through lectures and labs. Lab exam will be cumulative and use a multiple choice and short answer format. Module tests will not be cumulative and use a multiple-choice question format. The time/date and location for each module test will be posted on the BIO A01 Quercus webpage.

The final grade in BIO A01 will be determined as follows:

Laboratory component of final grade = 31% (see breakdown below)

Labs: 6 online quizzes x 0.5% = 3%

There will be 6 online laboratory quizzes delivered through Quercus. You are responsible for completing each quiz by the assigned due date. No make-ups are possible. The first and second quiz, which will be focused on Lab 1 (field trip) and Lab 2 respectively, must be completed by Friday, September 20 at 11:59am. The other four quizzes are to be completed 15 minutes before each of your scheduled labs. You must attend the associated lab to receive credit for the quiz. Quiz marks will revert to zero if you are absent from the associated lab.

6 lab reports x 2% = 12%

With the exception of the Scavenger Hunt (Lab 1), which is completed outside of the lab and submitted online through Quercus, Lab Reports (2-6) will be completed during scheduled lab periods and submitted to Lab TA before you leave the lab. It is a prudent use of time to complete as much of these reports as possible before your scheduled lab period.

Formal Lab Report (FLR) = 9%

Submitted online through Quercus by 12:00pm (noon) on Friday, October 25, 2019.

1% of the FLR mark will come from the successful completion of two online modules (details will be posted on Quercus).

Lab Exam = 7%

Laboratory exam will cover all 6 labs in BIOA01 and will be delivered with the test for Module 3 during the final exam period.

Lecture component of final grade = 69% (see breakdown below)

Test for Module 1 = 20%

Online assessments for Module 1 = 3%

Test for Module 2 = 20%

Online assessments for Module 2 = 3%

Test for Module 3 = 20%

(during final exam period)

Online assessments for Module 3 = 3%

Statement regarding use of Turnitin

In BIO A01, we will be using Turnitin (through Quercus) for the submission of the FLR. Failure to submit or failure to submit a Turnitin readable document will result in a grade of 0. You should be aware of the following policy for the use of Turnitin at the University of Toronto:

“Normally, students will be required to submit their course essays to Turnitin.com for a review of textual similarity and detection of possible plagiarism. In doing so, students will allow their reports to be included as source documents in the Turnitin.com reference database, where they will be used solely for the purpose of detecting plagiarism. The terms that apply to the University’s use of the Turnitin.com service are described on the Turnitin.com website.”

Course Content

A. Lecture topics (*tentative; may change over course*)

Module 1: Evolution	Lecture topics include: <ul style="list-style-type: none">- Population biology- Microevolution- Tree of Life: Classification and Phylogeny- Evo – Devo- Tree of Life: Protists
Module 2: Cell Biology and Metabolism	<ul style="list-style-type: none">- Tree of Life: Prokaryotes- Cells- Respiration- Photosynthesis
Module 3: Gene Action and Inheritance	<ul style="list-style-type: none">- DNA: the stuff of heredity- Peas, Pedigrees and Probability- Transcription and Translation- Tree of Life: Viruses & Prions

B. Lab Topics

Lab 1: Field trip + scavenger hunt (completed between Sept 3rd – 20th; details in manual)

Lab 2: Introduction to Phylogenetics

Lab 3: Pollen tube formation and the Central Dogma of Biology

Lab 4: There’s something living there! Life, where you may not expect it.

Lab 5 and 6: Using a Single Nucleotide Polymorphism to Predict Bitter Tasting Ability & Investigating Mendelian Inheritance

Facilitated Study Groups (FSGs)

BIO A01 is supported by an independently-run facilitated study group. These weekly study sessions are open to all BIO A01 students. Attendance is voluntary. If you have questions, visit the FSG website at: <http://ctl.utsc.utoronto.ca/home/fsg>

Please note: All materials used in FSG sessions (handouts, questions etc.) are created by the FSG moderators and not by the course instructors. Please ensure that you contact the FSG moderators about any questions related to these materials. Please also note that while the questions used in the FSG sessions are very useful to promote your understanding of course concepts, they may **NOT** be in the same format that will be used for the term tests in BIOA01.

Fall 2019 – Important Dates

Sept. 2	Labour Day → University closed
Sept. 3	Classes begin in F and Y courses
Sept. 16	Last day to add F and Y courses
Oct. 14	Thanksgiving Day → University closed
Oct. 12 – 18	Reading Week (Note: Classes may be held on other campuses)
Nov. 18	<ul style="list-style-type: none"> • Last day to drop F courses without academic penalty and have them removed from the transcript • Last day to add or remove the CR/NCR mode of assessment (on ACORN) for an F section course (for details go to www.utsc.utoronto.ca/registrar)
Dec. 2	<ul style="list-style-type: none"> • Last day of classes and last day for submission of term assignments in F courses • Last day to drop UTSC F courses on eService and have them remain on the transcript with a grade of LWD indicating withdrawal without academic penalty. After this date grades are recorded on transcripts whether course work is completed or not (with a '0' assigned for incomplete work) and they are calculated into GPAs (Note: see www.utsc.utoronto.ca/registrar for LWD dates for courses on other campuses)
Dec. 3 – 5	Study break
Dec. 6 – 21	Final examinations in F courses
Dec. 23 – Jan. 3	December break → University closed

LECTURE INFORMATION

	DATE	TIME	LOCATION
LEC01	Tuesday	11 – 12	IC 130
	Thursday	11 – 12	IC 130
	Friday	10 – 11	AC 223
LEC02	Tuesday	1 – 2	AC 223
	Thursday	1 – 2	AC 223
	Friday	11 – 12	AC 223
LEC60	Online lecture – See Quercus for WebOption link		

SCHEDULED LAB PRACTICAL SCHEDULE

*NOTE: Lab 1 is the field trip/scavenger hunt and will be available Sept 3rd – 20th and does not require you to attend your regular practical until Lab 2.

Week	Lab #	Practical	Dates (2019)
1	2	Odd numbered practicals (eg. P0001, P0003, P0005....)	Sept 9 th – 13 th
2	2	Even numbered practicals (eg. P0002, P0004, P0006....)	Sept 16 th – 20 th
1	3	Odd numbered practicals	Sept 23 rd – 27 th
2	3	Even numbered practicals	Sept 30 th – Oct 4 th
1	4	Odd numbered practicals	Oct 7 th – 11 th
READING WEEK → NO CLASSES			Oct 12 th – 18 th
2	4	Even numbered practicals	Oct 21 st – 25 th
1	5	Odd numbered practicals	Oct 28 th – Nov 1 st
2	5	Even numbered practicals	Nov 4 th – 8 th
1	6	Odd numbered practicals	Nov 11 th – 15 th
2	6	Even numbered practicals	Nov 18 th – 22 nd

PRACTICAL	Week	Day	Time	Lab
P0001	1	Tuesday	9am to 12pm	SW 237
P0002	2	Tuesday	9am to 12pm	SW 237
P0003	1	Tuesday	9am to 12pm	SW 240
P0004	2	Tuesday	9am to 12pm	SW 240
P0005	1	Tuesday	9am to 12pm	SW 242
P0006	2	Tuesday	9am to 12pm	SW 242
P0007	1	Tuesday	12pm to 3pm	SW 237
P0008	2	Tuesday	12pm to 3pm	SW 237
P0009	1	Tuesday	12pm to 3pm	SW 240
P0010	2	Tuesday	12pm to 3pm	SW 240
P0011	1	Tuesday	12pm to 3pm	SW 242
P0012	2	Tuesday	12pm to 3pm	SW 242
P0013	1	Tuesday	3pm to 6pm	SW 237
P0014	2	Tuesday	3pm to 6pm	SW 237
P0015	1	Tuesday	3pm to 6pm	SW 240
P0016	2	Tuesday	3pm to 6pm	SW 240
P0017	1	Wednesday	10am to 1pm	SW 237
P0018	2	Wednesday	10am to 1pm	SW 237
P0019	1	Wednesday	10am to 1pm	SW 240
P0020	2	Wednesday	10am to 1pm	SW 240
P0021	1	Wednesday	1pm to 4pm	SW 237
P0022	2	Wednesday	1pm to 4pm	SW 237
P0024	2	Wednesday	1pm to 4pm	SW 240
P0025	1	Thursday	9am to 12pm	SW 237
P0026	2	Thursday	9am to 12pm	SW 237
P0029	1	Thursday	12pm to 3pm	SW 237
P0030	2	Thursday	12pm to 3pm	SW 237
P0031	1	Thursday	12pm to 3pm	SW 240
P0032	2	Thursday	12pm to 3pm	SW 240
P0033	1	Thursday	3pm to 6pm	SW 237
P0034	2	Thursday	3pm to 6pm	SW 237
P0035	1	Thursday	3pm to 6pm	SW 240
P0036	2	Thursday	3pm to 6pm	SW 240
P0041*	1	Monday	1pm to 4pm	SW-237
P0042*	2	Monday	1pm to 4pm	SW-237

*P0041 and P0042 occur on Mondays.

Course Regulations

Lectures

To get maximum benefit from the lectures in this course, students are advised to:

- **read the relevant sections in your textbook before the lecture** (see lecture schedule). Do not take extensive notes or memorize the material at this stage – just read and become familiar with the terms and concepts to be covered
- **download posted lecture material** from Quercus before each lecture
- **attend and actively engage during all lectures**
- **while attending/watching lectures, take your own notes** with the aim of understanding the main concepts covered
- re-read the relevant sections in your textbook as needed after lecture and create your own study notes; review your notes frequently
- **arrange to see the instructor** during scheduled office hours or by appointment if having difficulties understanding material covered in lectures

Attendance in Labs

Attendance in the labs is required to get credit for that lab and any associated work. You must arrive on time! The lab door will close at 20 minutes after the hour. If you arrive late and the door is closed, you will have missed the introductory information and will not be permitted to participate in the lab. If you are late or miss your lab entirely, **you may discuss your situation with the Course Coordinator.**

There will be no make-up labs in BIOA01.

Provided you have valid documentation, you may miss **one** lab practical without academic penalty during the course of the term. However, you will still be responsible for knowing what was done during this lab for your lab exam at the end of the semester. For subsequent missed labs, you will be assigned a grade of zero for all associated work.

Students who attend lab practicals that they are not registered in will be asked to leave the lab immediately and will be assigned a grade of zero for all associated work. You must attend the practical that you are registered in!

You will not receive credit for online quizzes, nor be allowed to submit lab reports for labs that you have not attended. Late formal lab reports will have a late penalty automatically applied (10% per day including weekends); work will not be accepted if more than 5 days late.

Procedure for missed labs and tests

In order to be eligible for consideration for a missed term test or lab work, students must provide a valid documented reason to the Course Coordinator.

1. For missed labs and late FLRs:

*****You must contact the Course Coordinator *before* the end of your scheduled lab to be eligible for accommodation. Please include a scanned copy of your self-declaration form with this email or indicate when you plan to submit the hard copy of this form. Once you are well enough to return to your academic duties, you must drop off this form to the Course Coordinator. Please remember that you are only allowed to be exempted from one lab practical, provided you have valid documentation, in BIOA01.*****

If you are ill during the term, and this illness influences your ability to attend your lab or meet a deadline for submission of a term assignment, you can submit a Self-Declaration of Student Illness form, indicating the days in which you were ill. This form is meant to take the place of the more typical medical form, and is available on the department's website www.utsc.utoronto.ca/biosci.

Please note the following aspects related to this Self-Declaration of Student Illness form:

1. Similar to the submission of a medical form, YOU ARE RESPONSIBLE for contacting the Course Coordinator to make arrangements for an accommodation for your absence.
2. You may use the Self-Declaration of Student Illness form ONLY for lab absences or term assignments. For any term exams in this course you will need to submit a Verification of Student Illness form (See "For Missed Term Tests"). For the final exam you will need to follow the typical procedures for petitioning to write a deferred exam.
3. You may use the Self-Declaration of Student Illness form up to two times in this course. If you require an additional accommodation for a term assignment you must then use the standard Verification of Student Illness form. However, you may only be exempted from one lab.
4. Submitting a false Self-Declaration of Student Illness form constitutes academic misconduct, and could be subject to sanctions under the Code of Behaviour on Academic Matters.

Please submit any Self-Declaration of Student Illness forms to the Course Coordinator as promptly as possible.

2. For missed term tests:

***** You must contact the Course Coordinator within 72 hours of the end of your scheduled term test to be eligible to write a make-up term test*****

Please submit a completed University of Toronto Verification of Illness or Injury Form. Form can be found here:

<http://www.utsc.utoronto.ca/registrar/verification-illness-or-injury>

The date/time of the original test that was missed must be clearly indicated as well as a clear statement of the medical issue.

If you cannot attend Friday evening or Saturday midterm tests for religious reasons, please notify the Course Coordinator in writing by e-mail within one week of the announced midterm test date; an alternative time will be presented if approved by the Instructor.

3. For missed tests during the final exam period/final exams:

Students must contact the Registrar's office (www.utsc.utoronto.ca/registrar/deferred-exams) and follow the procedures outlined in order to arrange to write a Deferred Final Exam (DFE). The DFE will be scheduled during the Winter 2020 Exam Period. Please note that the format of the DFE may differ from the original while covering the same content.

Important UTSC Policies

UTSC is dedicated to fostering an academic community in which the learning and scholarship of every member may flourish, with vigilant protection for individual human rights and a resolute commitment to the principles of equal opportunity, equity and justice.

1) Information on Academic Integrity

Academic integrity is essential to the pursuit of learning and scholarship in a University, and to ensure that a degree from the University of Toronto is a strong signal of each student's individual academic achievement. As a result, the University treats cases of plagiarism very seriously. The University of Toronto's Code of Behaviour on Academic Matters outlines behavior that constitutes academic dishonesty and the process for addressing such offenses (see <http://www.governingcouncil.lamp4.utoronto.ca/wp-content/uploads/2016/07/p0701-coboam-2015-2016pol.pdf>).

2) Information Regarding AccessAbility Services at UTSC

Students with diverse learning styles and needs are welcome in this course. In particular, if you have a disability/health consideration that may require accommodations, please feel free to approach the instructor in BIO A01 and/or the AccessAbility Services Office (Room AA142) as soon as possible. Please note that all inquiries are confidential. You can contact AccessAbility Services at 416-287-7560, by e-mailing ability@utsc.utoronto.ca or visiting their website (www.utsc.utoronto.ca/ability).

3) Information on Religious Observances

It is policy at UTSC to provide special consideration for recognized holy days which may be observed by our students. Though not all holy days require students to be absent from school, accommodations may still be necessary in some cases. As a student, it is your responsibility to check the due dates for all course work and scheduled dates for tests/exams on a regular basis. Inform the Course Coordinator of any potential conflicts at least 7 days prior to the date of the test/assignment. Failure to do so may result in special consideration not being granted (documentation may be required).

4) Procedures Regarding Final Marks

The final mark in BIO A01 is based on term work; the evaluation breakdown is included in this syllabus. After the final exam, marks are calculated and submitted to the Department for review. Once approved, the final mark for each student in the course will be released on ROSI/ACORN.

Final marks are not negotiable and instructors are not permitted to discuss final marks with students. If students have concerns about their final mark, they should consult the proper procedures to be followed as outlined by the Registrar's office:

<https://www.utsc.utoronto.ca/registrar/petitions>

Once final marks are posted, it is an academic offense to ask for your mark to be changed (SEE Academic Handbook).