

# **BIO A01H3 Y     *Life on Earth: Unifying Principles* - Summer 2015**

## **COURSE SYLLABUS**

### ***Welcome to Introductory Biology at UTSC!***

#### **Objectives and Outcomes**

The primary goal of this UTSC course (BIO A01H3 Y) is to provide students with the strong foundation needed to become a successful biologist. During the term you will learn:

- (1) the major principles of cellular organization and metabolic processes, the principles of gene action and inheritance; and the fundamentals of evolution, speciation and population genetics;
- (2) the essential skills to become an active learner of science
- (3) some basic laboratory skills that are required to pursue your chosen field in science;
- (4) to combine the learning objectives mastered (in items 1-3 above): to read relevant biology research articles, analyze data, and communicate experimental results.
- (5) To construct a biology-knowledge scaffold to serve as a foundation for upper year studies in the areas of cellular, molecular, physiological and evolutionary biology studies.

#### **Overview**

BIO A01H3 Y is taught in the Summer Term (May to August) and consists of thirty-six lectures on Biology content (three 50-minute lectures in one 3-hour session per week) and five labs (one 3-hour lab practical every two weeks throughout the term).

The **Biology Lectures are on Tuesday**. There are **three modules consisting of 12 lectures per module**. The **first 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 **second 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. The **third module** will examine evolution as the framework in modern biology, and topics such as population, genetics, cladistics and speciation. The diversity of life is emphasized throughout this course with emphasis on prokaryotes, viruses/prions and protists covered during the “Tree of Life” lectures.

The **Biology Labs are scheduled on Tuesdays and, Wednesdays** (at times depending on your Practical Section (P0001 to P0008)). These labs are led by teaching assistants (TAs) and are designed to provide students with opportunities to develop a variety of important skills that will be beneficial throughout their university experience in biology. Key concepts in science writing, math, statistics and critical thinking will be integrated into the course content.

## Course Personnel

There are several key people you should get to know in this course: (1) the Instructors, (2) the Course Coordinator, and (3) your Lab TA.

### (1) Instructors

- **Dr. Karen Williams is the Instructor.**

Office: **SW-563B** (only during office hours)

Office Hours: **Thursdays from 4:30pm to 5:30pm, Tuesdays TBA or by**

**Appointment** (use your U of T email account for all emails)

Email: **biolife@utsc.utoronto.ca** (include Williams and BIO A01 in subject line)

### (2) Course/Lab Coordinator

- **Sheila Rush is the Course Coordinator for BIO A01H3 Y for the Summer 2015 term.**

Sheila will deal with matters such as late enrollment, missed tests, missed labs, marks management and general advising as related to the course as a whole.

- Office: **SW241** (by appointment)

Office Hours: **TBA** (use your U of T email account for all emails).

Email: **biolife@utsc.utoronto.ca** (include Rush and BIO A01 in subject line)

### (3) Teaching Assistant (TA) – Practical TA

**The BIO A01H3 Y Labs are located in Room SW240.**

***Students must attend the specific Practical (Lab Section) in which they are registered.***

Each lab is led by a **Teaching Assistant (= TA)**, who will guide you through the lab exercises/experiments. Learn your Teaching Assistant's name and use the email address provided by your TA on your section's Blackboard page to contact your TA if you have questions/concerns regarding your labs or lab assignments.

## **Communication within BIO A01H3 Y**

The key source for information for BIO A01H3 Y is Blackboard. Information such as contact information and office hours, lecture outlines and notes, assignment instructions, test dates and locations and other useful resources will be posted on Blackboard throughout the course. Announcements and the video-taped lectures (see Web option and FSG links) for BIO A01H3 Y will be posted on Blackboard. Exam Marks will also be posted to the Blackboard Course Webpage.

Each Practical section also has its own Blackboard webpage; TA's will post information related to Practicals and Assignments on this webpage. Practical marks will be posted on the Blackboard Practical webpage. Please check the BIO A01H3 Y Blackboard Webpage frequently!

Always check the BIO A01H3 Y Blackboard Webpages (including the Discussion Board) for information before contacting the Instructor/Lab Coordinator, or your TA.

Events, such as Exam Viewings, are announced on Blackboard. Official announcements of these events will come through Blackboard once confirmed.

**Students should use their UTORid to log on to BIO A01H3 Y Blackboard Webpages. Log onto Blackboard by clicking the “Portal” link on the UTSC Homepage.**

**NOTE: You will need a UTSC computer account in order to logon onto Blackboard.**

**One central email address serves BIOA01: [biolife@utsc.utoronto.ca](mailto:biolife@utsc.utoronto.ca). This is to help professors stay organized and answer your emails quickly and effectively.**

***Please do not use professors' email addresses for BIOA01 communication!***

**Always use your UTSC or U of T email address for contacting the Instructors, the Course/Lab Coordinator, and the Teaching Assistants (TAs). Emails from other email addresses will not be answered.**

**Include the Instructor's name and the course code (BIO A01) you wish to email in the “Subject Line”**

## Course Materials:

### (A) Textbooks and Lab Manual

The complete **Textbook Package can be purchased at the UTSC Bookstore** located above Tim Horton's in the Bladen Wing. It includes the following items:

(1) The **Textbook** for BIO A01H3 Y is:

Russell PJ, Wolfe SL, Hertz PE, Starr C, Fenton B, Addy H, Maxwell D, Haffie T, Davey K. 2013. *Biology: Exploring the Diversity of Life*. (2<sup>nd</sup> Canadian ed.). 3-volume paperback. Toronto: Nelson Education Ltd. 1253 p.

Textbook Policy: We **strongly** recommend that students use the textbook, but it is not required. Although the 2<sup>nd</sup> and 1<sup>st</sup> Eds. have much in common, the material in some chapters has changed substantially and Lecture material may refer to specific page numbers and Figures in the 2<sup>nd</sup> Ed. textbook. Therefore having the 2<sup>nd</sup> Ed. may improve your ability to follow the Lectures and study effectively. Previous textbooks will not include an ebook or access to **Mindtap Study Guide**. **Regardless of the textbook you use, you are responsible for learning the material as presented in Lecture.**

(2) **Mindtap** is an additional, online supplement to help you master the material presented in BIO A01.

(3) The **Textbook Website (ebook)** developed by the Publisher of the textbook has additional resources that students will find useful in both introductory biology courses (BIO A01 and BIO A02). An Access Code to this site is included.

1. The **Lab Manual** is a separate publication that is required for all Lab Practicals. It is entitled: Rush S., Gladilina E., Armstrong C. 2015. *BIO A01H3 Y - Life on earth: Unifying Principles Lab Manual for Summer 2015*. Toronto, Ontario: University of Toronto Scarborough Printing Services.

There are changes in the new Summer 2015 Lab Manual. Photocopies of old, and now out-of-date, lab manuals are NOT ACCEPTABLE.

The **Lab Manual can be obtained from the Blackboard course page** (in the folder entitled "Practical Materials"). The Lab Manual is NOT FOR SALE at the Bookstore! The digital copy is the ONLY copy provided for Summer 2015!

**Copies of Lab Reports will not be provided by your TA! It is your responsibility to bring your own Lab Manual materials to your Practical in order to complete your assignments.**

**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 printed lab material to each of their scheduled Practicals.**

## (B) Lab Coats / Protective Eyewear

**Lab coats are required for all Biology labs at UTSC;** protective eyewear is required for some labs as indicated in your Lab Manual. **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, markers, rulers, erasers, and calculators to all labs. **Always check your Lab Manual for any special requirements for each of your labs.**

## (C) Statement regarding Use of Turnitin

During the Summer 2015 Semester, we will be using the website “Turnitin.com” for the submission of assignments (e.g. Formal Lab Reports) in BIO A01H3 Y. More information will be provided once all of the details have been worked out. For now, 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 essays 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 web site”.

**Any form of plagiarism whether intentional or unintentional on any material for BIO A01 will NOT be tolerated and you WILL receive a grade of ZERO for any work that is plagiarized.**

## Course Organization

The content in **BIO A01H3 Y** will be delivered through thirty-six 50-minute Biology Lectures (3 lectures within the 150 min time slot each week) and five 3- hour labs in alternate weeks  
Attendance in Laboratory Practicals is mandatory. Students will be evaluated through lab quizzes and reports, one assignment, one formal lab report, three quiz-tests “quests”, one midterm test and a cumulative final exam.

The students’ understanding of the material covered in each Module will be assessed by a midterm test using mainly a multiple-choice question format with a few short answer questions. The midterm test will be scheduled in the last 2 hours of the lecture on Tuesday June 23<sup>rd</sup>, 2015. There will be one makeup midterm test. For those who miss the midterm, you must provide within 72 hours of the midterm, valid, verified documentation for missing the scheduled midterm on June 23<sup>rd</sup>, 2015.

The final exam is **cumulative**; and the final exam will include synthetic questions relating to the *Tree of Life Lectures and other themes important to all 3 modules*. The final exam will also use a multiple-choice question format with a few short answer questions and will be scheduled in the UTSC Exam Period in August 2015; the details will be announced later and posted on the BIO A01H3 Y Blackboard Course page.

## 2015 Summer Sessional Dates

Monday, May 4	Classes begin in F and Y courses.
Sunday, May 10	Last day for students writing deferred examinations in August to adjust their current course load (on ROSI only).
Monday, May 18	Last day to add F and Y courses (on ROSI only).
Monday, May 18	Victoria Day → University closed.
Monday, June 8	Last day to drop F courses without academic penalty and have them removed from the transcript.
Monday, June 8	Last day to add or remove the CR/NCR mode of assessment (on ROSI) for an F section course. (Note: For details go to <a href="http://www.utscc.utoronto.ca/registrar">www.utscc.utoronto.ca/registrar</a> )
Monday, June 15	Last day to drop UTSC F courses and have them remain on the transcript with a grade of LWD indicating withdrawal without academic penalty. After this date grades are assigned whether or not course work is completed (with a '0' assigned for incomplete work) and are calculated into GPAs.
Monday, June 15	Last day of classes and last day for submission of term assignments in F courses.
Tuesday, June 16 - Saturday, June 20	Reading Week (Note: Classes or exams may be held on other campuses.)
Tuesday, June 16 - Saturday, June 20	Final examinations in F courses.
Monday, June 22	Classes begin in S courses and resume in Y courses.
Wednesday, July 1	Canada Day → University closed.
Monday, July 6	Last day to add S courses.
Monday, July 20	Last day to drop Y courses without academic penalty and have them removed from the transcript.
Monday, July 20	Last day to add or remove the CR/NCR mode of assessment (on ROSI) for a Y section course. (Note: For details go to <a href="http://www.utscc.utoronto.ca/registrar">www.utscc.utoronto.ca/registrar</a> )
Monday, July 27	Last day to drop S courses without academic penalty and have them removed from the transcript.
Monday, July 27	Last day to add or remove the CR/NCR mode of assessment (on ROSI) for an S section course. (Note: For details go to <a href="http://www.utscc.utoronto.ca/registrar">www.utscc.utoronto.ca/registrar</a> )
Saturday, August 1	Last day to confirm intention to graduate at the 2015 Fall Convocation.
Monday, August 3	Civic Holiday → University Closed
Tuesday, August 4	Last day of classes and last day for submission of term assignments in S and Y courses. (Note: Classes are held on this date only for courses that normally meet on a <b>Wednesday</b> .)
Wednesday, August 5 – Thursday, August 6	Study Break.
Wednesday, August 5 - Thursday, August 20	2015 Winter deferred examinations.
Thursday, August 6	Last day to drop UTSC S and Y courses and have them remain on the transcript with a grade of LWD indicating withdrawal without academic penalty. After this date grades are assigned whether or not course work is completed (with a '0' assigned for incomplete work) and are calculated into GPAs. (Note: See <a href="http://www.utscc.utoronto.ca/registrar">www.utscc.utoronto.ca/registrar</a> for LWD dates for courses on other campuses.)
Friday, August 7 – Thursday August 20	Final examinations in S and Y courses.
November TBA	2015 Fall Convocation. Check "Ceremony Dates" at <a href="http://www.convocation.utoronto.ca">www.convocation.utoronto.ca</a> for the date of the UTSC ceremony.

## BIO A01 LABORATORY PRACTICAL SCHEDULE SUMMER 2015

<b>Week</b>	<b>Lab #</b>	<b>Practical</b>	<b>Date (2015)</b>
<b>1</b>	<b>1</b>	Odd Numbered practicals (e.g. P0001, P0003...P0007)	May 4 to May 8
<b>2</b>	<b>1</b>	Even Numbered practicals (e.g. P0002, P0004...P0008)	May 11 to May 15
<b>1</b>	<b>2</b>	Odd Numbered practicals (e.g. P0001, P0003...P0007)	May 18 to May 22
<b>2</b>	<b>2</b>	Even Numbered practicals (e.g. P0002, P0004...P0008)	May 25 to May 29
<b>1</b>	<b>3</b>	Odd Numbered practicals (e.g. P0001, P0003...P0007)	June 1 to June 5
<b>2</b>	<b>3</b>	Even Numbered practicals (e.g. P0002, P0004...P0008)	June 8 to June 12
		Reading week (NO LABS)	June 16 to June 19
<b>1</b>	<b>4</b>	Odd Numbered practicals (e.g. P0001, P0003...P0007)	June 22 to June 26
<b>2</b>	<b>4</b>	Even Numbered practicals (e.g. P0002, P0004...P0008)	June 29 to July 3
<b>1</b>	<b>5</b>	Odd Numbered practicals (e.g. P0001, P0003...P0007)	July 6 to July 10
<b>2</b>	<b>5</b>	Even Numbered practicals (e.g. P0002, P0004...P0008)	July 13 to July 17
		HAND BACK LAB MATERIAL	July 27 to July 30

## Course Evaluation

The final grade in BIO A01H3 Y will be determined as follows:

**Labs 3% of final grade for each Practical**

**5 Practicals**

**=15 % of final grade for Practical sessions**

**3% - Laboratory Assignment TBA**

**7% - Formal Lab Report**

**= 25% of final grade for Practical Work**

<b>Quests (Blackboard Quiz/Tests at the end of each month)</b>	<b>5%</b>	of final grade
<b>Mid-Term Test (Tuesday June 23<sup>rd</sup>, 2015)</b>	<b>30 %</b>	of final grade
<b>Final Exam (Modules 1 to 3 + Tree of Life)</b>	<b>40 %</b>	of final grade

## Course Content

### 1. Lecture Topics (*tentative; may change over course*)

**Module 1: Cell biology & Metabolism**

- Tree of Life – Prokaryotes
- Cells
- Respiration
- Photosynthesis

**Module 2: Gene Action and inheritance**

- DNA the stuff of heredity
- Peas, Pedigrees and Probability
- Transcription and Translation,
- Tree of Life - Viruses & Prions

## Module 3: Evolution

- Population biology
- Microevolution
- Classification, Phylogeny and trees
- Evo – Devo
- Tree of Life - Protists

## 2. Lab Topics

**Lab 1:** Effect of CO<sub>2</sub> Availability on Photosynthesis and Data Collection for Formal Lab Report

**Lab 2:** DNA Extraction and Preparation of DNA Samples for PCR

**Lab 3:** Gel Electrophoresis of PCR Products and Data Analysis

**Lab 4:** Introduction to Microscopy using Algae

**Lab 5:** Reconstructing Evolutionary Relationships using the Principle of Parsimony

## Course Regulations

### 1. Attendance at Lectures

**Attendance at the Lectures is very highly recommended.** In order 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 with Textbook references; 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.
- **to download any posted LECTURE material** from the BIO A01H3 Y Blackboard Webpage before each Lecture.
- **to come to the Lecture and take your own notes** with the aim of understanding the main concepts covered.
- **to re-read the relevant sections in your Textbook** as needed after the Lecture and **create your own study notes; review your notes frequently.**
- **to arrange to see the Instructor(s)**, during scheduled Office Hours or by appointment, if you realize that you do not understand the concepts covered in the lectures or the labs.

### 2. Attendance at Labs

**Attendance in the Labs is required in order to get credit for that lab and any work associated with the lab.** Labs 2 through 5 (no Quiz in Lab 1) will start with a Quiz on the Lab Background Information so **be ON TIME!!** If you arrive at your lab late (within 10 minutes of the scheduled Lab start time), you may write the Quiz in the time remaining. The Lab door will be closed at the end of the Quiz while the TA introduces the lab. **If the door is closed – you are late and will be excluded from Practical! In order to meet course requirements you are only allowed to miss one lab practical with valid reason, any other lab you may miss will be assigned a grade of zero regardless of the reason.**

If you are more than 10 minutes late for a Lab or if you miss a Lab entirely, you **must discuss your situation(s) with the Course Coordinator, Sheila Rush**. You will not be allowed to submit Lab Reports/Assignments for Labs that you have not attended **without a valid documentable and verifiable reason**. Any Lab Reports/Assignments allowed to be submitted late must be given to the Lab Coordinator and will be assessed the appropriate late penalty (10% of the value of your mark per day); **work will not be accepted if more than 5 days late without permission of the Course Coordinator**.

### 3. Tests / Exams

**If you cannot attend Friday evening or Saturday Tests/Exams for religious reasons, please notify the Course Coordinator, Sheila Rush, in writing (by email) at least one week before the announced Exam date; an alternative time will be presented if approved by the Instructor.**

**If you miss the Midterm Exam, the Course Coordinator, Sheila Rush, must be contacted within 72 hours (or 3 days – weekends included!) of the scheduled exam (by email).** Only students with a valid, documented and verifiable medical reason, or a personal documented excuse (of an extreme nature) will be given any consideration for a Makeup Exam. ***Documentation must apply to the date/time of the originally scheduled Test.*** (Note: The format of the makeup midterm exam may differ from the original midterm while covering the same content). **Students who miss the scheduled makeup midterm will receive a grade of zero for the midterm regardless of the reason.**

**Students who miss the Final Exam must contact the Registrar's Office** (at [http://www.uts.utoronto.ca/~registrar/current\\_students/deferred\\_exams](http://www.uts.utoronto.ca/~registrar/current_students/deferred_exams)) and follow the procedures outlined in order to arrange to write a Deferred Final Exam. The Deferred Final Exam will be scheduled during the December 2015 Exam Period. (Note: The format of the Deferred Final Exam may differ from the original Final Exam while covering the same content).

### 4. Required Documentation for Missed Term Work (e.g. Assignments /Labs /Tests)

In order to be eligible for consideration for a missed Midterm Exam or to receive credit (whole/partial) for missed Labs (and associated Assignments), students **must** provide a valid documented reason **to the Course Coordinator within 5 days of the missed evaluation**.

For medical reasons, the **attending physician** (who must be registered with the College of Physicians and Surgeons) **must complete** the Standard University of Toronto Medical Certificate. Copies of the standard University of Toronto Medical Certificate are available on the UTSC Registrar's Website:

<http://www.illnessverification.utoronto.ca/>

The **date/time of the original lab or test that was missed MUST BE CLEARLY INDICATED as well as a clear statement of the medical problem**. Make sure that the Student's Name and UTSC Student Number are clearly indicated.

For other reasons (death in family, car accident/problems, transportation issues), students must provide verifiable documentation as appropriate to the situation and **discuss the situation with the Course Coordinator, Sheila Rush, as soon as possible**. **Students should always get valid and verifiable documentation for any situations that cause them to miss any marked course work during the term.** *NOTE: Reasons such as work, vacation, sleeping-in, other tests/exams and assignments in other courses are NOT ACCEPTABLE reasons for not completing work in BIOA01Y.*

## Important University of Toronto Scarborough (UTSC) Policies

The University of Toronto Scarborough 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 ensuring 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 cheating and plagiarism very seriously. The University of Toronto's Code of Behaviour on Academic Matters outlines behaviours that constitute academic dishonesty and the processes for addressing such offences (see <http://www.governingcouncil.utoronto.ca/policies/behaveac.htm>) Potential offences include, but are not limited to:

#### (1) **in term-work (e.g. papers, reports and assignments):**

- using someone else's ideas or words without appropriate acknowledgement
- submitting your own work in more than one course without the permission of the instructor
- making up sources or facts
- obtaining or providing unauthorized assistance on any assignment

#### (2) **on tests and exams:**

- using or possessing unauthorized aids
- looking at someone else's answers during an exam or test
- misrepresenting your identity

#### (3) **in academic work:**

- falsifying institutional documents or grades
- falsifying or altering any documentation required by the University, including (but not limited to) doctor's notes

All suspected cases of academic dishonesty will be investigated following procedures outlined in the Code of Behaviour on Academic Matters. If you have questions or concerns about what constitutes appropriate academic behaviour or appropriate research and citation methods, you are expected to seek out additional information on academic integrity from your Instructor(s) or from other institutional resources (see [http://www.utoronto.ca/academicintegrity/resourcesfor\\_students.html](http://www.utoronto.ca/academicintegrity/resourcesfor_students.html)).

### 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 Instructors in BIO A01H3 Y and/or the AccessAbility Services Office as soon as possible. BIO A01H3 Y personnel will work with you and AccessAbility Services to ensure you can achieve your learning goals in this Course. The **UTSC AccessAbility Services Office** is located in **Room SW-302**. Qualified staff is available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations. Note all enquiries are confidential. You can contact **AccessAbility Services** at 416-287-7560 or [ability@utsc.utoronto.ca](mailto:ability@utsc.utoronto.ca). The sooner you let us know about your needs, the quicker we can arrange the assistance need in achieving your learning goals in this Course.

### 3. **Information on Religious Observances**

It is a 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/Lab Coordinator** of any potential conflicts **at least 7 days prior** to the **date of the test or due date of the assignment**. Failure to do so may result in special consideration not being granted; documentation may be required.