DEPARTMENT OF BIOLOGY
UNIVERSITY OF TORONTO MISSISSAUGA

BIO152H5F LEC0101
Introduction to Evolution and Evolutionary Genetics
Course Outline - Fall 2015

Class Location & Time	Tue, 09:00 AM - 10:00 AM CC 1080 Thu, 09:00 AM - 10:00 AM CC 1080
Instructor	Dr. Maria Arts
Office Location	DV4002
Office Hours	Tues & Thu 11:00-12:15 PM
Telephone	905-569-4469
E-mail Address	maria.arts@utoronto.ca
Course Web Site	portal.utoronto.ca

Course Description

The scientific method and the modern theory of evolution as an introduction to biology. The principles of evolution, transmission and evolutionary genetics are developed in lectures and laboratories. [24L, 15P, 12T]

Prerequisite: Grade 12U Biology Note: Although 12U CHM and MAT are not prerequisites for BIO152H5, students intending to pursue a major or any specialist program in Biology must note that CHM110H5, CHM120H5 and MAT134Y5/ MAT135Y5/ MAT137Y5 are requirements for these programs.
Exclusion: BIO130H1; BIOA01H3 (SCI)
Distribution Requirement: SCI

The UTM Calendar states that students who lack the prerequisites for a course can be deregistered at any time

Objectives

After successfully completing BIO152, students should be able to:

1) understand the theory of evolution: evolutionary processes, introductory genetics, mutations, asexual and sexual reproduction, introduction to evolutionary behavior and sexual selection, speciation and evolution of diversity

2) gain an appreciation of the role of natural selection and evolution in producing the complexity of form and function and the great diversity of organisms on earth

3) understand and appreciate how principles of evolution and genetics have important scientific/medical and societal implications; for example antibiotic resistance in bacteria, the virulence of pathogens such as the Ebola virus, etc.

4) solve introductory genetic problems (Punnett squares) and understand the Hardy-Weinberg equilibrium principle used to solve evolutionary problems

5) understand the scientific method and be able to formulate scientific hypotheses and design experiments that test hypotheses

6) be able to retrieve, read, understand and paraphrase peer-reviewed scientific articles

7) critically analyze information presented in a variety of formats

8) express, in writing, the content of their learning about specific biological topics

Required Textbook and Materials

The following are available in a package at the bookstore:

1. Campbell Biology, First Canadian Edition. Pearson.

2. A Short Guide to Writing About Biology (Eighth Edition). Jan Pechenik. Pearson

3. Reading Primary Literature. Gillen. Pearson

4. SimUText voucher

5. Access code for MasteringBiology.com

You will need to purchase an iCLICKER to be used in tutorials (sold separately).

Supplemental Textbook and Materials

Course website: The website associated with this course is accessible via Blackboard, http://portal.utoronto.ca

Assessment and Grading Policies

Type	Description	Due Date	Weight
Term Test	Midterm Test 1	2015-10-15	10%
Term Test	Midterm Test 2	2015-11-12	15%
Quiz	Group Quiz 1	2015-10-09	1.5%
Quiz	Group Quiz 2	2015-11-06	1.5%
Lab	Laboratory portion of course	On-going	20%
Assignment	Scientific Literacy Assignment	On-going	20%
Other	Clicker Questions	On-going	2%
Final Exam	Cumulative Final Exam	TBA	30%
		Total	100%

Notes on Assessment Items

Term Tests: Two midterm tests will take place during the normal lecture time slots and in our regular lecture room

Final exam: Cumulative

Lab: Late lab assignments will not be accepted. Also, no lab make-up sessions will be permitted. A detailed lab grading scheme can be found on Bb.

Late literacy assignments: minus 10% per day of lateness.

Clickers: Students are expected to bring their clickers to tutorials. You cannot earn clicker marks if you do not have your clicker with you.

Participation: Group quizzes involve group discussion/participation in answering questions. Clickers are required.

Teaching Methods and Academic Supports

Lectures will be powerpoint presentations. Students are encouraged to ask questions and participate in class discussions. Lecture slides (in pdf format) will be posted on Bb under "Lectures" prior to each lecture period. Please note that some slides are a general outline of the material covered in class, and you will need to take notes during lectures.

Labs: All labs will be posted on Bb. Read each lab prior to the lab session, complete all pre-lab assignments, and bring required lab print-outs/materials to each lab.Students are expected to work cooperatively with their group members. The TAs are there to help you so ask questions if you need help or clarification.

Tutorials: Tutorial sessions are held every Friday; remember to bring your clickers. In tutorial sessions you will participate in case study analyses, scientific literacy workshops, and pair-share/group quizzes. Information pertaining to tutorials will be posted on Bb.

Academic Supports: Your key academic support is the class website on Bb; please check it regularly.

Procedures and Rules

E-Mail Policy

The University's official method of correspondence with students is through their University of Toronto e-mail accounts. It is the student's responsibility to keep his/her @mail.utoronto.ca account active and check it on a regular basis.

All e-mails from students must include your full name and student number as well as have the course code in the subject line.

Re-Mark Policy

Requests for re-evaluation of course work must be made in writing to the instructor no later than one month following the return of the work. Re-evaluation may result in a grade increase, decrease, or no change.

If there is a clerical error on your midterm or assignment (e.g., mark recorded incorrectly, adding error), please e-mail your TA as soon as possible to change the error. You will have to provide the marked test/assignment so that the clerical error can be confirmed and corrected. If you disagree with the way in which your assignment/test was marked, you **must** follow this procedure:

1. Write a note outlining your objections.

2. Attach this to the **original** assignment (keep a photocopy).

3. Submit both to your TA. If the problem cannot be resolved, your TA will forward the assignment to your professor.

Religious Observance

Information about the University's Policy on Scheduling of Classes and Examinations and Other Accommodations for Religious Observances is at http://www.viceprovoststudents.utoronto.ca/publicationsandpolicies/guidelines/religiousobservances.htm

Classroom Management

Expectations for Conduct in the Academic Setting: Students are expected to listen attentively during class but also engage in active discussion when invited to do so. Please show respect for your professor, TAs, and fellow students by listening quietly, participating when appropriate, arriving on time, and staying until the end of lecture. Please switch cell phones to silent mode and refrain from sending text messages during class. Use laptops in class for note-taking only. Please come to class prepared, ask questions, and be ready to participate.

Late Assignments, Extensions and Missed Term Tests

You are expected to complete and submit all assignments on time.

If you miss a **test or quiz**: *Make-up tests or make-up quizzes will not be offered. If you miss a test or quiz and have appropriate documentation (see below), then that test and quiz will not count towards your final grade, and the final exam will count for a higher percentage.*

If you miss an **assignment**: *Late lab assignments are not accepted. Late scientific literacy assignments will lose 10% per day.*

Documentation and Procedures:

1. Declare your absence on ROSI.
2. Contact your professor via email within 48 hours of the missed quiz/test/assignment.
3. Submit an explanation in writing within one week, detailing the University-approved circumstance s, beyond your control, that caused you to miss the quiz/test/assignment. The explanation must be accompanied by proper documentation (originals, in hard copy) and should be submitted to the Department of Biology to Diane Matias (diane.matias@utoronto.ca). Include your name, your student number, your @utoronto e-mail address, your phone number, the course designator/ code, and a description of the item you missed (e.g., Quiz #1). The standard U of T Mississauga medical certificate is the appropriate documentation to submit if you were ill.

Note that it is not sufficient simply to visit a doctor's office; the documentation must show that you were incapable of writing the test or completing the assignment, for medical reasons. The medical certificate must include the statement: "[Name of student] was unable to write the test on [date] for medical reasons." Documentation must show the physician was consulted within one day of the test. A statement merely confirming the report of an illness made by a student is not acceptable.

Note that holidays and pre-purchased plane tickets, family plans (unless critical, such as death of an immediate family member), and lack of preparation or too many other tests are not acceptable excuses.

The written explanation and documentation that you submit represents an appeal from you, requesting the opportunity to make up

that portion of your grade in some other manner. If an appeal is not received, or if the appeal is deemed unacceptable, you will receive a grade of zero for the item you missed. If the appeal is granted - that is, your reason for missing the test is considered acceptable - then a mechanism for making up the missed item will be offered.

If your appeal is accepted, it may be considered appropriate to do a weighted average of your other term marks to make up for the missed item, rather than setting a makeup date. If a makeup is offered, the date will be determined by the Department, and you will be notified. The general format and content of the makeup will be similar to the original test, but the specific format and content may not be the same.

Missed Final Exam

Students who cannot write a final examination due to illness or other serious causes must file an online petition **within 72 hours of the missed examination**. Original supporting documentation must also be submitted to the Office of the Registrar **within 72 hours of the missed exam**. Late petitions will **NOT** be considered. If illness is cited as the reason for a deferred exam request, a U of T Medical Certificate must show that you were **examined and diagnosed at the time of illness and on the date of the exam, or by the day after at the latest**. Students must also record their absence on ROSI on the day of the missed exam or by the day after at the latest. Upon approval of a deferred exam request, a non-refundable fee of $70 is required for each examination approved.

Academic Integrity

The code of Behaviour on Academic Matters states that:

> *The University and its members have a responsibility to ensure that a climate that might encourage, or conditions that might enable, cheating, misrepresentation or unfairness not be tolerated. To this end all must acknowledge that seeking credit or other advantages by fraud or misrepresentation, or seeking to disadvantage others by disruptive behaviour is unacceptable, as is any dishonesty or unfairness in dealing with the work or record of a student.*
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> - University of Toronto Mississauga Academic Calendar

It is your responsibility as a student at the University of Toronto, to familiarize yourself with, and adhere to, both the Code of Student Conduct and the Code of Behaviour on Academic Matters.

This means, first and foremost, that you should read them carefully.

- The Code of Student Conduct is available from the U of T Mississauga website (Registrar > Academic Calendar > Codes and Policies) or in your print version of the Academic Calendar.
- The Code of Behaviour on Academic Matters is available from the U of T Mississauga website (Registrar > Academic Calendar > Codes and Policies) or in your print version of the Academic Calendar.
- Another helpful document that you should read is How Not To Plagiarize, by M. Proctor.

Turnitin.com
Normally, students will be required to submit written assignments to Turnitin.com for a review of textual similarity and detection of possible plagiarism. In doing so, students will allow their assignments 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. Students may 'opt-out' of this part of the evaluation. A student that "opts-out" of using Turnitin, must provide a written request and discuss this in person with Dr. Arts by Sept. 18.

iClickers: DO NOT PARTICCIPATE FOR SOMEONE ELSE. It is an academic offence to bring someone else's clicker to class and use it. Students should refer to the Code of Student Conduct and the Code of Behaviour on Academic Matters (included in your Academic Calendar) and be familiar with UofT academic integrity policies.

Additional Notes

Equity Statement

The University of Toronto is committed to equity and respect for diversity. All members of the learning environment in this course should strive to create an atmosphere of mutual respect. As a course instructor, I will neither condone nor tolerate behaviour that undermines the dignity or self-esteem of any individual in this course and wish to be alerted to any attempt to create an intimidating or hostile environment. It is our collective responsibility to create a space that is inclusive and welcomes discussion. Discrimination, harassment and hate speech will not be tolerated. If you have any questions, comments, or concerns you may contact the UTM Equity and Diversity officer at edo.utm@utoronto.ca or the University of Toronto Mississauga Students' Union Vice President Equity at vpequity@utmsu.ca.

Other Resources

AccessAbility

The University accommodates students with disabilities who have registered with the AccessAbility Resource Centre. Please let me know in advance, preferable in the first week of class, if you will require any accommodation on these grounds. To schedule a registration appointment with a disability advisor, please call the centre at 905-569-4699 or e-mail at: access.utm@utoronto.ca.
http://www.utm.utoronto.ca/access/

Robert Gillespie Academic Skills Centre
Students can visit the Academic Skills Centre to consult with one of its strategists about understanding learning style, developing study plans for upcoming tests/exams, or discussing papers. Special Diagnostic Assessments are also offered and are designed to help you learn exactly where you stand with respect to critical academic skills.
http://www.utm.utoronto.ca/asc

UTM Library (Hazel McCallion Academic Learning Centre)
The University of Toronto boasts the biggest academic library in Canada and the second biggest in North America. Various services are available to students at the UTM Library and across the UofT library system. Services including borrowing, interlibrary loans, online references, laptop loans and the RBC Learning Commons. For more information, visit http://library.utm.utoronto.ca.

Course Schedule

WEEK	Tuesday's Lecture	Thursday's Lecture	Friday's Active Learning Tutorial	Lab
1	Sept 8th Course Introduction	Sept 10th Science and Biology *Readings: Ch 1*	Sept 11th Orientation and pre-assessment test (no mark value)	No LAB THIS WEEK
2	Sept 15th Science and Biology *Readings: Ch 1*	Sept 17th Water, carbohydrates, proteins, nucleic acids *Readings: Ch 2-5 (these chapters should be a review from secondary school)*	Sept 18th Scientific Literacy Workshop: Searching the Scientific Literature	Arthropod Diversity and Adaptation *Readings: Lab 1*
3	Sept 22nd Lipids and cell structure *Readings: Ch 2-5, Ch 7, Sec 7.1*	Sept 24th Lecture Cell division and mitosis *Readings: Ch 12*	Sept 25th Case study	Isolating DNA *Readings: Lab 2*
4	Sept 29th Meiosis: Why sexual reproduction? *Readings: Ch 13*	Oct 1st Introduction to genetics: Mendel and the gene *Readings: Ch 14*	Oct 2nd Case Study	Mitosis and Meiosis *Readings: Lab 3 (SimUText)*
5	Oct 6th Mendel and the gene, con't *Readings: Ch 14*	Oct 8th Chromosomal basis of inheritance *Readings: Ch 15*	Oct 9th Group quiz: preparation for midterm 1 (clickers required)	Natural Selection *Readings: Lab 4*
6	Oct 13th Introduction to evolution Evolution: central unifying concept of biology *Reading: Ch 22*	Oct 15th **MIDTERM 1** *Lectures: weeks 1-4, inclusive*	Oct 16th Scientific Literacy Workshop: Paraphrasing vs Plagiarizing	NO LAB THIS WEEK
7	Oct 20th Process of evolution *Readings: Ch 22, 23*	Oct 22nd Natural selection: Evolution in action *Readings: Ch 22*	Oct 23rd Case Study	Evolutionary medicine: Part 1: Mastering the techniques *Readings: Lab 5*

8	Oct 27th The nature of natural selection and adaptation *Readings: Ch 22, 23*	Oct 29th Evolutionary mechanisms: genetic drift, gene flow, mutations *Readings: Ch 23*	Oct 30th Case Study	Evolutionary medicine: Part 1: Data collection *Readings: Lab 5 (SimUText)* Patterns of inheritance *Readings: Lab 6*
9	Nov 3rd Hardy-Weinberg Principle Inbreeding and genetic diversity *Readings: Ch 23, Ch 56, Sec 56.2*	Nov 5th Introduction to behavior *Readings: Ch 51*	Nov 6th Group quiz 2: preparation for midterm 2	Sexual selection *Readings: Lab 7*
10	Nov 10th Evolution and behavior *Readings: Ch 51*	Nov 12th **MIDTERM 2** *Content: weeks 5-8, inclusive*	Nov 13th Case Study	Evolutionary medicine: Part 2: group experiment set-up *Readings: Lab 5*
11	Nov 17th Sexual selection and male competition *Readings: Ch 23, 51*	Nov 19th Sexual selection and female choice *Readings: Ch 23, 51*	Nov 20th Case Study	Evolutionary medicine: data collection *Readings: Lab 5*
12	Nov 24th Origin of species and speciation *Readings: Ch 24*	Nov 26th Speciation *Readings: Ch 24*	Nov 27th Post-assessment (final exam question)	Evolutionary medicine: **project presentations** *Lab 5*
Final	Final Exam: December Exam Period (Exam date will be set by the registrar's office) Special Deferred Final Exam: Exam date will be set by registrar's office			Cumulative (multiple choice) Cumulative (fill-in-the-blank, short-answer)

Last Date to drop course from Academic Record and GPA is November 4, 2015.

Every attempt will be made to follow this syllabus, but its content are subject to change, according to the rules as outlined in the UTM Instructor's Handbook, section 3.2.2.