BIOL 110

Human Genetics and Evolution

Fall Term 2017-18

CALENDAR DESCRIPTION
Introductory genetics and evolutionary processes as they relate to the human condition – genetic diseases, medical techniques, inheritance and ethical issues such as cloning and genetically modified foods.
NOTE Also offered online. Consult Arts and Science Online. Learning Hours may vary.
LEARNING HOURS 118 (26L;10T;10G;36O;36P)
ONE-WAY EXCLUSION May not be taken with or after BIOL 102/3.0; BIOL 103/3.0.

SCHEDULE

Refer to the University Timetable for scheduling details.

Instructor	**Dr. Tim Birt**
Instructor Contact	(613) 533 6156 birtt@queensu.ca
Office Hours	Rm. 4433A Bioscience Complex. No specific times.
TAs:	None
TA Office Hours	None

Learning Objectives
Biology 110, **Human Genetics**, is intended as an elective course for students from all academic disciplines with the exception of biology. No scientific backroad is required for enrollment. The course will provide an overview of basic concepts in genetics and how they apply to humans. The goal is to provide non-biologists with sufficient information to support a basic understanding of the relevance of genetics to many topical issues in modern society.

The course combines directed readings, independent investigation of topics of interest, and interaction with peers and instructors. Participants will be expected to learn basic concepts through the readings and to engage at a deeper level with a topic of choice and produce an essay. In a series of online roundtables, students will interact with peers and contribute actively to discussions of assigned topics.

Learning Outcomes
After completing BIOL 110, students should be able to:

- identify and define basic concepts in genetics such as inheritance, gene, and chromosome
- apply genetic concepts in the understanding of human evolution
- appreciate the relevance of genetics to important societal issues such as stem cell research, longevity research, genetic testing, and cancer
- distinguish between “older-school” research approaches and more cutting-edge approaches
- evaluate how life might be affected by new technologies in the Genomics Age.

Topics

- The Human Genome
- Cell Biology / Chromosomes
- Meiosis and Development
- Mutation / Single-Gene Inheritance
- Beyond Mendel's Laws/ Sex and Genetics
- Multifactorial (Complex) Traits & Genetics of Behavioural Traits
- Population Genetics – Constant Allele frequencies / Changing Allele Frequencies
- Human Evolution
- Cancer
- Genetic Technology/Genetic Testing
- Genomics

Learning Hours

Teaching method	*Average hours per week*	*Number of weeks*	*Total hours*
Group learning	2	12	24
Online activity	3	12	36
Private study	5	12	60
Total hours on task			120

Course Outline
Helpful Hints

This course will include several components including assigned readings, roundtable discussions, quizzes, essays, and a final exam. In a traditional live biology course, students interact with each other during the lecture periods and during lab sessions. In this course, student-to-student interaction will occur mainly through the roundtable discussions (and, no doubt, through private electronic communication). For the roundtables, the class is broken down into groups of approximately six students. Topics of discussion are assigned and each group is expected to enter into an online discussion based on information students glean from any source they deem appropriate. You will be graded according to the quality of your participation in the discussion. There will be three roundtables over the semester. The first is a practice round which you should use to familiarize yourself with the process and to benefit from feedback from your instructor or TA. You will be evaluated not only on the information you bring forward, but also on your discussion of material put forward by others in your group. Therefore, it is critical to the success of the roundtables that students get going early. If everyone leaves it to the last moment to post there will be little discussion of ideas (which will be reflected in the grades awarded).

As you will note, the course is broken down into 11 modules (listed on the banner of course Welcome Page). When you click on each module you will see a brief overview followed by learning outcomes, readings, and assignments/activities. Be sure to watch the videos. At the end you will find a more comprehensive summary of the material included in the module. Be sure to read those summaries.

There will be two quizzes in this course. Quizzes will be done online at specified times. Make sure you are aware of the times because there will be no re-writes unless you have a medical reason. You will also be required to submit two essays.

Please note that I will be paying particular attention to the issue of plagiarism in this course. Your first assignment will be to submit a brief essay on this topic to ensure that you understand what plagiarism is and so that you know how to attribute credit to the work of others.

Finally, try your best to avoid procrastination with assignments. Internet service is not always reliable and this can be very frustrating if you are pushing a deadline to the last minute. Good luck with the course!

RoundTable Discussion Information

Students in this course come from diverse academic backgrounds. Your introduction to genetics will benefit greatly from interaction with your colleagues, and that is the purpose of the roundtable discussion series. For the roundtables, you will be placed into groups of approximately six students and you will be provided topics to research, think about, and share information/ideas about. The members of your group will change for each roundtable discussion. The goal is to help achieve the learning goals set out for the course.

There will be three roundtable sessions which are worth 20 percent of the course grade. The first session will not contribute to your course grade but it will be evaluated to provide feedback on your contributions. In that sense it can be viewed as a practice session. Participation is important because the feedback you receive will be valuable guidance regarding what is expected in your posts. The remaining two sessions will each be evaluated out of 10 according to the **grading rubric shown below.**

Each student group should have just one discussion thread going for each roundtable. Once a roundtable has been started with the first posting from someone in your group, please do not start a new thread. This will make it simpler for everyone to follow the entire discussion.

Expectations

Don't procrastinate! It is critical that you post in a timely manner to allow sufficient time for discussion to ensue. If students leave their posts to the last minute the discussion component will suffer and that will be reflected in the grades awarded. Late posts will not be accepted.

Contributions are expected to be thoughtful and based on solid information. The latter can come from the text and from any other sources of your choosing. It is critical that information sources are properly referenced in your posts. You are expected to understand how this is done to avoid plagiarism. You are encouraged to cite sources as links to allow access to others in your group.

You should plan to spend 4-6 hours per week reading the text and additional course material (including posts from other members of your group).

Topics

Roundtable 1 (practice) (opens 18 September at 9:00 am; closes 28 Sept. at 4:00 pm)
Until relatively recently, the amount of genetic information that could be obtained for any individual person was very limited. That situation has changed dramatically with the development of new and powerful technologies that facilitate the collection and analysis of huge amounts of information about anyone at relatively low cost. What are some positive and negative implications of this new technology?

Roundtable 2 (opens 9 October at 9:00 am; closes 19 Oct. at 4:00 pm)
Topic to be announced.

Roundtable 3 (opens 30 October at 9:00 am; closes 9 November at 4:00 pm)
Topic to be announced.

RoundTable Grading Rubric

Criteria	Poor (0-2)	Acceptable (2-4)	Good (4-6)	Excellent (8-10)
Frequency and Timeliness (2 marks)	No posts.	Participates once or twice.	Participates more than twice.	Participates more than twice throughout the forum period (i.e. posts on different days).
Quality (4 marks)	Posts show little understanding of course content.	Posts show a good understanding of course content.	Posts show a good understanding of course content and evidence of reflection.	Posts show an excellent understanding of course content and evidence of insightful reflection.
Contribution (4 marks)	Posts show no effort to respond to previous posts or to elicit responses.	Posts show some effort to respond to previous posts and to elicit responses.	Posts show a good effort to respond to previous posts and to elicit responses.	Posts show an excellent effort to respond to previous posts, to elicit responses and to contribute substantially to the understanding of course content.

Final Proctored Exam

Once the exam schedule has been finalized the exam date will be posted on your SOLUS account. Students living in the Kingston area will write their final exam on Queen's campus. Students writing off campus will receive an email to their Queen's email account with full details of date/time/location of their exam. Please note: off campus exams will be held on the same day as Kingston exams, but the ***start time*** may vary slightly due to the requirements of the off-campus exam centre.

When you registered for the course, you indicated the exam centre location. If you do not remember the exam location you chose, or if you wish to change your exam location, please email: cds@queensu.ca or call 613-533-3322. The deadline for changing your exam centre can be found at http://www.queensu.ca/artsci_online/e-learning/completing-your-course. You must request the change prior to this deadline or you will be subject to a non-refundable administrative fee of $100.00 per exam.

All special needs students should contact CDS, immediately following registration to inform them of any special accommodations which may be required for proctored exams. **CDS must be notified of any accommodations by the last date to change your exam centre location.**

For further information regarding exams, see: http://www.queensu.ca/artsci_online/e-learning/completing-your-course

Location and Timing of Final Examinations

As noted in Academic Regulation 8.2.1, "the final examination in any class offered in a term or session (including Summer Term) must be written on the campus on which it was taken, at the end of the appropriate term or session at the time scheduled by the Examinations Office." The exam period is listed in the key dates prior to the start of the academic year in the Faculty of Arts and Science Academic Calendar and on the Office of the University Registrar's webpage. A detailed exam schedule for the Fall Term is posted before the Thanksgiving holiday; for the Winter Term it is posted the Friday before Reading Week, and for the Summer Term the window of dates is noted on the Arts and Science Online syllabus prior to the start of the course. Students should delay finalizing any travel plans until after the examination schedule has been posted. Exams will not be moved or deferred to accommodate employment, travel /holiday plans or flight reservations.

CALCULATOR POLICY [where applicable]

Calculators acceptable for use during quizzes, tests and examinations are intended to support the basic calculating functions required by most Arts and Science courses. For this purpose, the use of the Casio 991 series calculator is permitted and is the only approved calculator for Arts and Science students. This inexpensive calculator sells for around $25 at the Queen's Campus Bookstore, Staples and other popular suppliers of school and office supplies.

Textbooks/Readings

Human Genetics, Concepts and Applications (Ricki Lewis, 11th edition, McGraw-Hill)

Suggested Time Commitment

to complete the readings, assignments and course activities, students can expect to spend on average, about 10-11 hours per week on the course.

Grading Scheme

Component	Weight	Due dates
Roundtable Discussion (1 practice + 2 x 10%)	20%	TBA
Eassays (2)	20%	TBA
Quizzes (2 x 15%)	30%	TBA
Proctored Final Exam	30%	TBA

Grading Method

All components of this course will receive numerical percentage marks. The final grade you receive for the course will be derived by converting your numerical course average to a letter grade according to Queen's Official Grade Conversion Scale:

Arts & Science Letter Grade Input Scheme

Assignment mark	Numerical value for calculation of final mark
A+	93
A	87
A-	82
B+	78

B	75
B-	72
C+	68
C	65
C-	62
D+	58
D	55
D-	52
F48 (F+)	48
F24 (F)	24
F0 (0)	0

Your course average will then be converted to a final letter grade according to Queen's Official Grade Conversion Scale:

Queen's Official Grade Conversion Scale

Grade	Numerical Course Average (Range)
A+	90-100
A	85-89
A-	80-84
B+	77-79
B	73-76
B-	70-72
C+	67-69
C	63-66
C-	60-62
D+	57-59
D	53-56
D-	50-52
F	49 and below

Academic Integrity and Queen's Code of Conduct

Students are responsible for familiarizing themselves with the regulations concerning academic integrity and for ensuring that their assignments and conduct conform to the principles of academic integrity. Information is available in the Arts and Science Calendar (see Academic Regulation 1 - http://www.queensu.ca/artsci/academic-calendars/regulations/academic-regulations, on the Arts and Science website (see http://www.queensu.ca/artsci/academics/undergraduate/academic-integrity), and at Biology's website (http://www.queensu.ca/biology/undergrad/integrity.html) and from the instructor of this course.

Departures from academic integrity include plagiarism, use of unauthorized materials, facilitation, forgery and falsification, and are antithetical to the development of an academic community at Queen's. Given the seriousness of these matters, actions which contravene the regulations on academic integrity carry sanctions that can range from a warning or the loss of grades on an assignment to the failure of a course to a requirement to withdraw from the university.

Accommodation Policy, Exam Conflicts, and Other Conflicts

Students who feel they need accommodations for disabilities or extenuating circumstances, or have a conflict between exams or other commitments should consult the Biology Department's website for details about how to proceed (http://www.queensu.ca/biology/undergrad/integrity.html). In general, the earlier a course coordinator is apprised of an extenuating circumstance, the more likely an accommodation can be made. Students are encouraged to be proactive in anticipating difficulties, when it is possible to do so.

Students may apply to write a make-up or deferred exam if they have an exam conflict as defined in the Academic Regulations of the Faculty (See Arts and Science Calendar Regulation 8 - http://www.queensu.ca/artsci/academic-calendars/regulations/academic-regulations). In this case, the student should report to the Exams Office first to verify that there is a genuine exam conflict. Biology professors will not consider your situation to be a conflict unless it meets the criteria set out by the Faculty of Arts and Sciences. Students may request a make-up or deferred exam if they have an exam conflict with off-campus travel associated with a field course (e.g BIOL-307/3.0 or 407/3.0) that is held during the fall or winter terms.

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Accommodation of Disabilities

Queen's University is committed to achieving full accessibility for persons with disabilities. Part of this commitment includes arranging academic accommodations for students with disabilities to ensure they have an equitable opportunity to participate in all of their academic activities. If you are a student with a disability and think you may need accommodations, you are strongly encouraged to contact the Disability Services Office (DSO) and register as early as possible. For more information, including important deadlines, please visit the DSO website at: http://www.queensu.ca/hcds/ds/