



BIOL*1090 Introduction to Molecular and Cellular Biology

Winter 2023

Section(s): C01

Department of Molecular and Cellular Biology

Credit Weight: 0.50

Version 2.00 - January 11, 2023

1 Course Details

1.1 Calendar Description

This course will foster an understanding of key concepts in molecular and cell biology and genetics including evolution, relationship between structure and function, energy and regulation, interrelatedness of life, and the nature of science. By relating these concepts to their daily lives, through analysis of problems and tutorial discussions, students will develop an understanding of five central themes: 1) all living things share common properties, 2) the cell is the fundamental functional unit of life, 3) managing energy is central to success, 4) genes are the fundamental information unit of life, and 5) heredity. Students lacking Grade 12 or 4U Biology should consult with their program counsellor prior to taking BIOL*1090 in first semester.

1.2 Course Description

This course explores the foundational concepts of cell biology and genetics. These areas are the focus of a great deal of fascinating research with far-reaching biomedical, ethical, and social implications. The structure and function of cellular components will be discussed in the context of their contribution to the functioning of organisms, highlighting the importance of organelles in the function of eukaryotic cells and ultimately higher tissue assemblies. Topics will also include the study of genes and chromosomes, the mechanisms underlying the transmission of traits from one generation to the next, and the role of mutations that lead to the generation of genetic diversity and disease.

By the end of this course, students will understand the connections between the biology of cells and the inheritance of genetic information, and will appreciate the foundational importance of genetics and cell biology in all aspects of biological science. Students will also gain experience at scientific writing for an audience of their peers, and apply their cellular and molecular perspective to an interdisciplinary problem.

1.3 Timetable

Lectures:

Section 01: Mon, Wed, 8:30-9:20 AM ROZH 104

Section 02: Mon, Wed 3:30-4:20 PM ROZH 104

Section 03: Mon, Wed 3:30-4:20 PM Virtual

All material given in lectures is the responsibility of the student, including announcements regarding reading and seminar assignments.

1.4 Final Exam

Final Exam: April 17th 8:30-10:30 am

Room locations: TBD

Please see WebAdvisor for the latest information.

2 Instructional Support

Instructional support is available via your course co-ordinators. **Please send all course related inquiries to biol1090@uoguelph.ca**

2.1 Instructional Support Team

Instructor: Terry Van Raay
Email: tvanraay@uoguelph.ca
Telephone: +1-519-824-4120 x 52864
Office: SSC 3247
Office Hours: Tuesdays from 2:00-4:00
 Wednesdays from 2:00-3:30

Instructor: George Van Der Merwe
Email: gvanderm@uoguelph.ca
Telephone: +1-519-824-4120 x 54298
Office: SSC 4443
Office Hours: Tuesdays: 3:00-4:30
 Fridays: 1:30-3:00

Course Co-ordinator: Marissa Dahari
Email: mdahari@uoguelph.ca
Telephone: 519-824-4120, x53329
Office: SSC 3503
Office Hours: Students are encouraged to contact Mrs. Dahari by email with their questions before any meetings are scheduled when necessary.

***** Due to the large volume of emails that the teaching team receives, all email correspondence related to this course needs to include the course code **BIOL1090** in the Subject line, to avoid potential delays in receiving a reply.**

2.2 Teaching Assistants

The seminar instructors are graduate students in the Department of Molecular and Cellular Biology. Please do not contact them outside of your seminar unless they have given you permission to do so.

2.3 Additional Course Support Co-ordinator

Akash Jairaj

Email: biol1090@uoguelph.ca

Telephone: 519-824-41220 x53866

Office: SSC 4251

Students are encouraged to contact Mr. Jairaj by email with their questions before any meetings are scheduled when necessary.

***** Due to the large volume of emails that the teaching team receives, all email correspondence related to this course needs to include the course code **BIOL1090** in the Subject line, to avoid potential delays in receiving a reply.**

3 Learning Resources

3.1 Required Resources

Textbook and Online Resources (Textbook)

Biology 1090 - University of Guelph by Morris, Lodish and Pierce, 1st Edition, 2018.

Macmillan Learning. New York, NY.

This text and the online resource access code are available for purchase at the University of Guelph Bookstore.

The purchase of the BIOL 1090 textbook comes with a code that provides access to the online resources for 4 years. This text and the associated online resources are an absolute requirement for this course. **10% of the final grade distribution for this course is linked to the course textbook and can not be completed without the online access code.**

Courselink - BIOL*1090 (Website)

<https://courselink.uoguelph.ca>

There is a CourseLink site set up for this course. This will allow you to access the course material, post questions on the discussion board (see below), access useful websites, and check your grades. Please review CourseLink announcements on a regular basis. You can access this CourseLink from <http://courselink.uoguelph.ca>. Your username is your Central Login ID and your password is your uoguelph email password.

Courselink - Online Workshops (Website)

The Online Skills Workshops are available to students in the CourseLink site [Online Workshops - Skills and Attributes of a Biologist](#). These workshops are designed to develop skills essential to the successful completion of assignments in BIOL*1070, BIOL*1080 and BIOL*1090. Students will access the workshops as needed in each of the courses. Further details will be posted on CourseLink.

3.2 5 Steps to Getting Help in BIOL*1090

Step 1: Read all posted instructions relevant to your question.

Step 2: Consult the discussion board on CourseLink. The discussion board is an open forum to promote exchange of information between students. You are encouraged to post clear, concise questions and to try to answer other students' posts. When posting a question please use a subject line that clearly indicates the topic of your question, making it easy for other students to find topics they wish to discuss. The teaching team will monitor the discussion board and provide input when deemed appropriate. Please keep all questions and comments relevant to the course. Offensive postings will not be tolerated.

Step 3: Post your question to the relevant discussion board on CourseLink.

Step 4: Send your question to the course instructor/coordinator by emailing **biol1090@uoguelph.ca**. Alternatively, see an instructor during their virtual office hours posted above.

Questions regarding individual circumstances should be directed to the course coordinator.

4 Learning Outcomes

4.1 Course Learning Outcomes

By the end of this course, you should be able to:

1. Demonstrate an understanding of the fundamental elements of cell structure and molecular and Mendelian genetics.
 2. Identify and evaluate the different types of scientific literature and execute an effective search of the scientific literature for completion of course assignments.
 3. Synthesize ideas and communicate concepts in cellular and molecular biology using written communication skills in written assignments and examinations.
 4. Practice working independently using online workshops to complete course assignments.
 5. Manage time effectively and follow instructions to meet deadlines for course requirements.
 6. Demonstrate proper attribution of others' ideas to avoid plagiarism in scientific communication.
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5 Teaching and Learning Activities

5.1 Tentative Schedule of Topics

Week Topic

- | | |
|---|-------------------------------------|
| 1 | DNA, chromosomes |
| 2 | Mitosis, meiosis |
| 3 | Mendelian principles of inheritance |
| 4 | Mendel and human pedigrees |
| 5 | Sex linkage, mutations |
| 6 | Alleles, gene function |

Week Topic

- 7 The cell as the fundamental unit of life
- 8 Cell membranes and Compartments
- 9-11 Organelles and Cellular Architecture
- 12 The Nucleus

6 Assessments

6.1 Assessments

Assessment	Value (% of final grade)	Date	Learning Outcome
Seminars	10%	Scheduled weekly throughout semester - See CourseLink site for seminar schedule	1, 3, 5
Graded Online Assignments	10%	Scheduled weekly throughout semester - See BIOL*1090 CourseLink site for assignment schedule and links	1 - 6
Midterm Exam	30%	Feb 17th 8:30-9:20 am (Virtual)	1,3,5
Scientific Literature Paraphrasing Assignment	7%	First Submission: Feb. 27th (Online Dropbox) Final Submission: Mar. 17th (Online	1 - 6

Assessment	Value (% of final grade)	Date	Learning Outcome
		Dropbox)	
Scientific Literature Final Writing Assignment	13%	Mar. 24th (Online Dropbox)	1 - 6
Final Exam	30%	April 17th 8:30-10:30 am	1,3,5

6.2 Seminars

There will be 10 weekly seminars throughout the semester with each being guided by a teaching assistant (TA). The TA will start with a short presentation to reinforce key course concepts. Students will then split into small groups to work on iClicker questions. Seminar slides from each week will be posted on Friday afternoon, these can be found under the **Content** tab and then navigating to the appropriate **Week #** on the left side of the page.

Attendance is mandatory for all seminars.

6.3 Online Assignments

Weekly graded online assignments will be posted after each week of lecture, 10 in total. Content will be based on the lecture and seminar material when applicable. Grades will be based on completion. Each assessment is worth 1% of the final grade for 10% total of the final mark. **You must purchase the textbook and use the online access code to complete these assignments.** See CourseLink for a detailed schedule of due dates.

6.4 Midterm Exam

Saturday Feb. 17th 8:30-9:20 am

The midterm exam will cover the lecture material from lectures 1 – 12 inclusive, and the material from seminars 2, 3, and 4. Seminar 7 will be used as a midterm review. The midterm exam is compulsory and will count for 30% of your final grade. Alternate times will be set for

midterm exams only if there is a direct varsity or academic conflict with another course. No other reasons will be accepted (voluntary, medical, compassionate, or other reasons).

Conflicts must be reported to the course coordinator by Friday Jan 27th. If a student does not write the midterm exam they will receive a grade of 0% unless proper documentation is provided to the course coordinator. In cases with proper documentation, the weight of the missed midterm exam will be added to the final exam. **Documentation must be provided to the course coordinator to be considered.**

The midterm will be a virtual exam and will be accessible from **8:30-9:20 am on Friday Feb. 17th**. This exam will require the use of Respondus monitoring and lockdown browser. Students who have human rights concerns regarding the use of Respondus may request to write in person during the same time window using lockdown browser on their own device (location TBA). **These requests must be sent to the course coordinator at biol1090@uoguelph.ca no later than Friday January 27th by 4:30 pm.**

6.5 Online Skills Workshops

As a first year biology student you have been automatically enrolled in the workshop course "Skills and Attributes of a Biologist" found on the CourseLink homepage. You will be required to complete the **Information Management** and **Written Communication** workshops in order to complete the Scientific Literature Paraphrasing Assignment and the Scientific Literature Final Writing Assignment.

6.6 Scientific Literature Writing Assignments

Two assignments will assess writing, information and project management skills. The Scientific Literature Paraphrasing Writing Assignment will involve using skills developed in the Written Communication online workshop to paraphrase given sections of a selected scientific journal article (worth **5%** of final grade). Feedback on this paper will be given by your TA, after which you will have the opportunity to incorporate feedback and re-submit (worth **2%**). Students will then put their paraphrasing skills into practice as well as skills developed in the Information Management online workshop with the Scientific Literature Final Writing Assignment, which will be a 1.5 - 2 page paper covering a specific topic (worth **13%**).

Full assignment details will be posted to Courselink.

6.7 Final Exam

Date and Time:

April 17th 8:30-10:30 am

Location TBA

The final exam is compulsory and will be comprehensive.

7 Course Statements

7.1 Policy for Re-grading of Midterm Exams and Assignments

Students who wish to have their midterm exam or assignments re-graded must submit their marked exam or original assignment **within 1 week** of the return of the midterm exam or assignment. The entire midterm exam or assignment will be re-graded so the mark may go up, down or remain unchanged.

There will be no extensions granted for course assignments unless accompanied by medical or compassionate documentation to the course coordinator.

7.2 Use of Personal Information

Personal information is used by University officials in order to carry out their authorized academic and administrative responsibilities and also to establish a relationship for alumni and development purposes. The University of Guelph's policy on the Collection, Use and Disclosure of Personal Information can be found in the Undergraduate Calendar. (<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/intro/index.shtml>)

8 Department of Molecular and Cellular Biology Statements

8.1 Academic Advisors

If you are concerned about any aspect of your academic program:

- Make an appointment with a program counsellor in your degree program. [B.Sc. Academic Advising](#) or [Program Counsellors](#)

8.2 Academic Support

If you are struggling to succeed academically:

- Learning Commons: There are numerous academic resources offered by the Learning Commons including, Supported Learning Groups for a variety of courses, workshops related to time management, taking multiple choice exams, and general study skills. You can also set up individualized appointments with a learning specialist.
<http://www.learningcommons.uoguelph.ca/>
- Science Commons: Located in the library, the Science Commons provides support for

physics, mathematic/statistics, and chemistry. Details on their hours of operations can be found at: <http://www.lib.uoguelph.ca/get-assistance/studying/chemistry-physics-help> and <http://www.lib.uoguelph.ca/get-assistance/studying/math-stats-help>

8.3 Wellness

If you are struggling with personal or health issues:

- Counselling services offers individualized appointments to help students work through personal struggles that may be impacting their academic performance.
<https://www.uoguelph.ca/counselling/>
- Student Health Services is located on campus and is available to provide medical attention. <https://www.uoguelph.ca/studenthealthservices/clinic>
- For support related to stress and anxiety, besides Health Services and Counselling Services, Kathy Somers runs training workshops and one-on-one sessions related to stress management and high performance situations.
<http://www.selfregulationskills.ca/>

8.4 Personal information

Personal information is collected under the authority of the University of Guelph Act (1964), and in accordance with Ontario's Freedom of Information and Protection of Privacy Act (FIPPA) <http://www.e-laws.gov.on.ca/index.html>. This information is used by University officials in order to carry out their authorized academic and administrative responsibilities and also to establish a relationship for alumni and development purposes.

For more information regarding the Collection, Use and Disclosure of Personal Information policies please see the Undergraduate Calendar.
(<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/intro/index.shtml>)

8.5 Course Offering Information Disclaimer

Please note that course delivery format (face-to-face vs online) is subject to change up to the first-class day depending on requirements placed on the University and its employees by public health bodies, and local, provincial and federal governments. Any changes to course format prior to the first class will be posted on WebAdvisor/Student Planning as they become available.

9 University Statements

9.1 Email Communication

As per university regulations, all students are required to check their e-mail account regularly: e-mail is the official route of communication between the University and its students.

9.2 When You Cannot Meet a Course Requirement

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons please advise the course instructor (or designated person, such as a teaching assistant) in writing, with your name, id#, and e-mail contact. The grounds for Academic Consideration are detailed in the Undergraduate and Graduate Calendars.

Undergraduate Calendar - Academic Consideration and Appeals

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml>

Graduate Calendar - Grounds for Academic Consideration

<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml>

Associate Diploma Calendar - Academic Consideration, Appeals and Petitions

<https://www.uoguelph.ca/registrar/calendars/diploma/current/index.shtml>

9.3 Drop Date

Students will have until the last day of classes to drop courses without academic penalty. The deadline to drop two-semester courses will be the last day of classes in the second semester. This applies to all students (undergraduate, graduate and diploma) except for Doctor of Veterinary Medicine and Associate Diploma in Veterinary Technology (conventional and alternative delivery) students. The regulations and procedures for course registration are available in their respective Academic Calendars.

Undergraduate Calendar - Dropping Courses

<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-drop.shtml>

Graduate Calendar - Registration Changes

<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/genreg-reg-regchg.shtml>

Associate Diploma Calendar - Dropping Courses

<https://www.uoguelph.ca/registrar/calendars/diploma/current/c08/c08-drop.shtml>

9.4 Copies of Out-of-class Assignments

Keep paper and/or other reliable back-up copies of all out-of-class assignments: you may be asked to resubmit work at any time.

9.5 Accessibility

The University promotes the full participation of students who experience disabilities in their academic programs. To that end, the provision of academic accommodation is a shared responsibility between the University and the student.

When accommodations are needed, the student is required to first register with Student Accessibility Services (SAS). Documentation to substantiate the existence of a disability is required; however, interim accommodations may be possible while that process is underway.

Accommodations are available for both permanent and temporary disabilities. It should be

noted that common illnesses such as a cold or the flu do not constitute a disability.

Use of the SAS Exam Centre requires students to make a booking at least 14 days in advance, and no later than November 1 (fall), March 1 (winter) or July 1 (summer). Similarly, new or changed accommodations for online quizzes, tests and exams must be approved at least a week ahead of time.

For Guelph students, information can be found on the SAS website
<https://www.uoguelph.ca/sas>

For Ridgetown students, information can be found on the Ridgetown SAS website
<https://www.ridgetownc.com/services/accessibilityservices.cfm>

9.6 Academic Integrity

The University of Guelph is committed to upholding the highest standards of academic integrity, and it is the responsibility of all members of the University community-faculty, staff, and students-to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff, and students have the responsibility of supporting an environment that encourages academic integrity. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection.

Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor.

Undergraduate Calendar - Academic Misconduct
<https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml>

Graduate Calendar - Academic Misconduct
<https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/index.shtml>

9.7 Recording of Materials

Presentations that are made in relation to course work - including lectures - cannot be recorded or copied without the permission of the presenter, whether the instructor, a student, or guest lecturer. Material recorded with permission is restricted to use for that course unless further permission is granted.

9.8 Resources

The Academic Calendars are the source of information about the University of Guelph's procedures, policies, and regulations that apply to undergraduate, graduate, and diploma programs.

Academic Calendars
<https://www.uoguelph.ca/academics/calendars>

9.9 Disclaimer

Please note that the ongoing COVID-19 pandemic may necessitate a revision of the format of course offerings, changes in classroom protocols, and academic schedules. Any such changes will be announced via CourseLink and/or class email.

This includes on-campus scheduling during the semester, mid-terms and final examination schedules. All University-wide decisions will be posted on the COVID-19 website (<https://news.uoguelph.ca/2019-novel-coronavirus-information/>) and circulated by email.

9.10 Illness

Medical notes will not normally be required for singular instances of academic consideration, although students may be required to provide supporting documentation for multiple missed assessments or when involving a large part of a course (e.g.. final exam or major assignment).

9.11 Covid-19 Safety Protocols

For information on current safety protocols, follow these links:

- <https://news.uoguelph.ca/return-to-campusess/how-u-of-g-is-preparing-for-your-safe-return/>
- <https://news.uoguelph.ca/return-to-campusess/spaces/#ClassroomSpaces>

Please note, these guidelines may be updated as required in response to evolving University, Public Health or government directives.
