

Faculty of Science Course Syllabus
BIOL 2020 Cell Biology
Winter 2022

BIOL 2020 has committed to online learning (lectures and labs) until at least the February Break. If permitted, we will resume in-person learning on Monday, Feb 28th.

Teaching Team:

Mindy McCarville



mindy.mccarville@dal.ca

Course Coordinator | Lab Instructor

Contact me for questions on:

General course administration.
Anything to do with labs.
Anything else on your mind 😊

Dr. Nicanor González-Morales



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Lecturer

Contact me for questions on:

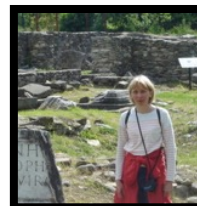
General course administration.
Anything to do with lectures.
Anything else on your mind 😊

Dr. Katy Garant



Instructor

Dr. Laura Tatar



Course Technician

Course Delivery and Overview: Biology 2020 introduces you to the eukaryotic cell. Lecture content describes major cell components and activities at ultrastructural and molecular levels. The concept of the cell as an integrated structural, functional unit is developed. Lab content considers the experimental approaches for studying cell biology and ways that this information is communicated.

Lectures: Until Feb 28th, lectures will be presented MWF from 8:35-9:25 am via Brightspace, in a synchronous format. Recordings will be made available post-lecture. We plan to resume in-person lectures on Feb 28th, and will provide updates as information becomes available.

Labs: There are six, 3-hr lab sessions throughout the term. Until Feb 28th, labs will run via Brightspace, in a synchronous format. Lab attendance is mandatory. We plan to resume in-person labs on Feb 28th, and will provide updates as information becomes available.

Course Goals and Objectives:

BIOL 2020 will build on the following knowledge/skills:

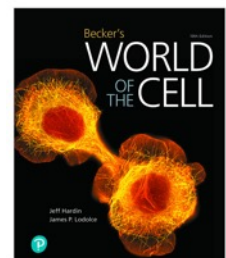
- Describe the process by which carbohydrates, lipids and proteins are assembled from monomers and identify their functional roles in the eukaryotic cell.
- Describe the structure and function of the organelles found in eukaryotic cells, demonstrating an appreciation for the overall architecture of the cell.
- Identify the components of biological membranes, including the various types of membrane proteins.
- Explain the fluid mosaic model and describe how membranes exhibit selective permeability.
- List the key products and features of glycolysis, the citric acid cycle, and oxidative phosphorylation and understand the flow of energy through the entire process.
- Recall the steps relating to cell division, understanding what cellular processes happen at each step, and describe the control mechanisms for the process.
- Understand the mechanism by which a signal is transmitted into the cell via G Protein-Coupled Receptors and Tyrosine Kinase Receptors.
- List several examples of second messengers and describe how each is involved in signal transduction pathways.
- Search and locate appropriate primary literature; generate proper citations in CSE format.
- Demonstrate pipetting proficiency.
- Describe how cells can be maintained *in vitro*.
- Demonstrate the basic steps to align a compound microscope.
- Calculate cell concentration using a hemocytometer.
- Design an experiment using replicates and controls.
- Prepare a protein dilution series.
- Describe how protein can be extracted from cells and how protein concentration can be calculated.
- Calibrate a spectrophotometer.
- Construct a standard curve to determine sample concentration.
- Present data in the form of a table and graph with proper formatting.
- Describe protein electrophoresis and western blotting theory.
- Interpret western blotting data.
- Describe how immunofluorescence can be used for subcellular localization of proteins.

Course Prerequisites: 1010 or BIOL 1020 or SCIE 1505 or equivalent (minimum grade of C)

Suggested Textbook:

We will be using **Becker's World of the Cell (10th ed)** by **Jeff Hardin and Gregory Paul Bertoni** (published by Pearson). Older editions of the book are suitable if you can find one!

Note: this is a great book, and it was used to write the lectures. However, it is listed as "suggested", meaning that we think it is possible for all students to be successful in the course without using the textbook – it is up to you! The midterm and final exams will be based on lecture content only.



Technical Requirements:

You will need reliable internet connection, with access to software for writing, presenting, graphing, etc. You will need a laptop, or robust tablet with audio and video capabilities (speaker, microphone, and webcam). Your cell phone alone will not be sufficient. All Dalhousie students can download the entire Microsoft Office 365 Suite (full version) from Dalhousie for free. For our course, we recommend that you have the full version. If you want to access the online apps, click the ☰ in the top left-hand corner. Keep in mind that the online apps may lack some of the features normally available in the full version of Microsoft Office. We also recommend that you familiarize yourself with other free programs, including Zoom and Adobe Acrobat Reader DC.

Overview of Course Assessments:

(Please see the Quick Guides on Brightspace for a detailed weekly breakdowns.)

Component	Due Date (AST – Halifax time)	Value	Notes
Weekly Lecture Quizzes	Sundays at 11:59 pm	5% total	<ul style="list-style-type: none"> • Nine quizzes, each worth 1%. • The four lowest quiz marks will be dropped.
Weekly Lab Quizzes	Your lab day, prior to start time	5% total	<ul style="list-style-type: none"> • Six quizzes (forward-moving only), each worth 1%. • The lowest quiz mark will be dropped.
Lab Assignments	Your lab day	13% total	<ul style="list-style-type: none"> • Submitted to Brightspace by 11:59 pm on your lab day.
Midterm	Monday, Feb 14 th	20%	<ul style="list-style-type: none"> • Multiple Choice. • Includes content from Weeks 1-16 (inclusive).
Final Lab Project	Friday, Mar 25 th at 11:59 pm	12%	<ul style="list-style-type: none"> • See full description on Brightspace.
Lab Test	Wednesday, Apr 6 th	10%	<ul style="list-style-type: none"> • <i>Format TBA.</i>
Final Exam	To be scheduled by the Registrar's Office	35%	<ul style="list-style-type: none"> • <i>Format TBA.</i> • Cumulative; includes lecture content from all weeks.

Policy for Missed Assessments:

Assessment	What happens if you miss the deadline?
Lecture Quizzes	<ul style="list-style-type: none"> You will get zero on the quiz. However, the <u>four</u> lowest quiz marks will automatically be dropped.
Lab Attendance	<ul style="list-style-type: none"> Lab attendance is mandatory. If you are unable to attend a lab session, notify Mindy in advance of your lab session. If permitted, a make-up lab will be scheduled. Note: rescheduling is not always possible.
Lab Quizzes	<ul style="list-style-type: none"> You will get a zero on the quiz (<i>see Note 3 below</i>). However, the lowest quiz mark will automatically be dropped.
Lab Assignments & Final Lab Project	<ul style="list-style-type: none"> Lab assignments must be submitted by 11:59 pm <u>on your lab day</u>. Late submissions are not accepted and a grade of zero will be given (<i>see Notes 1, 2, and 3 below</i>). The Final Lab Project is due on Friday Mar 25th by 11:59 pm. There is a 48-hour grace period for projects. There will be no extensions given (<i>see Notes 2 and 3 below</i>). Projects submitted on Monday Mar 28th (or later) are subject to a 10% late penalty per day with a daily deadline of 11:59 pm (i.e., your project is out of 100 points, so each day late is a 10 pt deduction).
Midterm & Lab Test	<ul style="list-style-type: none"> You must contact Mindy prior to the midterm or lab test along with the reason for not writing the test at the designated time. In the case of a valid excuse, a make-up test will be scheduled within 7 days of the original date. If you cannot write the make-up midterm on the scheduled date due to a valid excuse, the weight of the midterm will be moved to the final exam.
Final Exam	<ul style="list-style-type: none"> You must contact Mindy <u>prior to the exam</u>, along with the reason for not writing the exam at the designated time. In the case of a valid excuse, a make-up exam will be scheduled within 7 days of the original date. If you cannot write the make-up examination on the scheduled date due to a valid excuse, a second and final opportunity to write the exam will be given.

Note 1: “Long-term absence” refers to absences of more than three consecutive days due to major or chronic physical or mental health conditions, or other extenuating circumstances such as caregiving duties; immediate family illness, injury or death; involvement in an accident; legal proceedings; being a victim of a crime, domestic or intimate partner violence.

Note 2: if you have an **Accessibility Plan** that allows for coursework deferrals or deadline extensions, you must contact your instructor in advance to implement your plan.

Note 3: Technical problems (files mysteriously disappearing, submitting the wrong file, blank files, not backing up your work, submitting an incomplete quiz, forgetting a quiz, etc.) are not grounds for an extension. On Brightspace, always review the file you uploaded and read the prompts during a quiz. If something looks strange, email Mindy ASAP!

Communication:

Primary communication between Instructors and students shall be conducted via the @dal.ca email system. It is your responsibility to frequently (~daily) check your @dal.ca email account. We occasionally post announcements on Brightspace. You can adjust your Brightspace settings to receive course notifications.

We are also happy to schedule individual meetings, upon request.

Email Netiquette: We will do our best to respond in a timely manner. However, in an effort to model a healthy work/life balance, we will generally not respond to emails after 5:00 pm on Monday-Friday, or on weekends.

Please address all email concerns to Nicanor for lecture-related content or Mindy for lab-related content. The TAs are not available to answer emails. Email tips:

- Remember that we have access to everything you submit on Brightspace, so there is no need to attach large files in an email.
- Put an appropriate subject line, provide your first and last name, and include key information to reduce unnecessary back and forth replies.

Synchronous Sessions Netiquette:

During online lab sessions, you will frequently be required to share your screen. You should be mindful of what tabs are open, what images may be on your desktop, etc. Keep it professional.

Adjusting your Mindset (as you become Capable 2nd Year Biologists):

You are fully capable of succeeding in this course. You would not have gotten here otherwise. With that in mind, we want to provide some advice on expectations:

1) We are training you to become independent thinkers and confident adults. Avoid asking us (or your TA) to hold your hand during every step of your journey through second year – we will talk about cell biology with you for as long as it takes for you to understand concepts, but we cannot ‘pre-mark’ worksheets or assignments as we need to be fair to the other students in the class. Challenge yourself to think critically, building upon the knowledge you have amassed up to this point and be confident in your preparation when completing assessments. In other words, you can totally do this! 😊

2) Effort-exerted and time-spent does not equate success. This is a frustrating lesson, but it is true. It does not matter if you spend 10 hours on an assignment if you ultimately did it incorrectly. It also does not matter if you spent hours re-writing all your lecture notes if you ultimately did not retain or process any of the content. Work smarter, not longer! (Talk to us if you want to brainstorm study strategies. We want to help!). At the end of the day, marks are earned based on correctness and not based on the mark you feel you deserve.

Assessment Re-evaluation:

As mentioned above, marks are awarded based on correct responses. If you notice an error in marking (i.e., the rubric is filled out incorrectly, the TA mentioned that you were missing something, but you actually included it, etc.), please notify Mindy and your mark will be adjusted accordingly.

If you have specific and valid concerns that your assignment was marked incorrectly and are requesting a full re-evaluation of an assessment, please note that your mark may stay the same or it may increase/decrease. Requests for re-evaluation must occur within 7 days of releasing the grade, and only those requests with legitimate concerns will be addressed.

Academic Integrity:

Contents of the lab assignments and projects, feedback, rubrics, Brightspace quizzes, the midterm, the lab test, and the final exam are all property of BIOL 2020 and are strictly confidential. You may not share, distribute, or post any of the content from these assessments with anyone, either in-person or online (e.g., Email, WhatsApp, Discord, Chegg, Course Hero, Studocu, etc.)

All lab and lecture quizzes are open book/notes. This means that you are welcome to use our class (Brightspace) resources. You are not allowed to access other internet sites (e.g., Chegg, Google, YouTube, etc.). Collaboration during the quizzes is not permitted. By completing a quiz, you are promising that the work submitted is solely of your own efforts.

lab assignments and the final lab project will be assessed with Urkund (Dalhousie's plagiarism detection software). Please remember that you cannot copy/paste any text from your article into your poster.

We take academic integrity very seriously. If there is suspicion of even a minor academic offence, we will engage Dalhousie's academic integrity process and forward the case to a Faculty of Science Academic Integrity Officer. Do not put yourself in a situation where your academic career is in jeopardy.

Copyright Notice:

All course materials are designed for use as part of BIOL 2020 at Dalhousie University and are the property of the course Instructors. This includes, but it not limited to, lecture slides and videos, lab-related documents, lab slides and videos, Brightspace quizzes, lab assignments, lab projects, midterms, tests and examinations. These documents are solely for your learning and evaluation in BIOL 2020. It is an academic offence to share these materials outside of this course space in such a way that others might gain an unfair advantage, and students who do so may be subject to University discipline. Copying this material for distribution may also lead to a violation of Copyright law.

Conversion of numerical grades to Final Letter Grades follows the [Dalhousie Common Grade Scale](#):

A+	90-100		Excellent	Considerable evidence of original thinking; demonstrated outstanding capacity to analyze and synthesize; outstanding grasp of subject matter; evidence of extensive knowledge base.
A	85-89			
A-	80-84			
B+	77-79		Good	Evidence of grasp of subject matter, some evidence of critical capacity and analytical ability; reasonable understanding of relevant issues; evidence of familiarity with the literature.
B	73-76			
B-	70-72			
C+	65-69		Satisfactory	Evidence of some understanding of the subject matter; ability to develop solutions to simple problems; benefitting from his/her university experience.
C	60-64			
C-	55-59			
D	50-54	Marginal Pass		Evidence of minimally acceptable familiarity with subject matter, critical and analytical skills (except in programs where a minimum grade of 'C' is required).
F	< 50	Inadequate		Insufficient evidence of understanding of the subject matter; weakness in critical and analytical skills; limited or irrelevant use of the literature.

Recognition of Mi'kmaq Territory

Dalhousie University is located in Mi'kma'ki, the ancestral and unceded territory of the Mi'kmaq. We are all Treaty people.

Faculty of Science: University Policies and Statements

This course is governed by the academic rules and regulations set forth in the University Calendar and by Senate

Academic Integrity

At Dalhousie University, we are guided in all of our work by the values of academic integrity: honesty, trust, fairness, responsibility and respect (The Center for Academic Integrity, Duke University, 1999). As a student, you are required to demonstrate these values in all of the work you do. The University provides policies and procedures that every member of the university community is required to follow to ensure academic integrity.

Information: https://www.dal.ca/dept/university_secretariat/academic-integrity.html

Accessibility

The Advising and Access Services Centre is Dalhousie's centre of expertise for student accessibility and accommodation. The advising team works with students who request accommodation as a result of a disability, religious obligation, or any barrier related to any other characteristic protected under Human Rights legislation (Canada and Nova Scotia).

Information: https://www.dal.ca/campus_life/academic-support/accessibility.html

Student Code of Conduct

Everyone at Dalhousie is expected to treat others with dignity and respect. The Code of Student Conduct allows Dalhousie to take disciplinary action if students don't follow this community expectation. When appropriate, violations of the code can be resolved in a reasonable and informal manner—perhaps through a restorative justice process. If an informal resolution can't be reached, or would be inappropriate, procedures exist for formal dispute resolution.

Code: https://www.dal.ca/dept/university_secretariat/policies/student-life/code-of-student-conduct.html

Diversity and Inclusion – Culture of Respect

Every person at Dalhousie has a right to be respected and safe. We believe inclusiveness is fundamental to education. We stand for equality. Dalhousie is strengthened in our diversity. We are a respectful and inclusive community. We are committed to being a place where everyone feels welcome and supported, which is why our Strategic Direction prioritizes fostering a culture of diversity and inclusiveness

Statement: <http://www.dal.ca/cultureofrespect.html>

Recognition of Mi'kmaq Territory

Dalhousie University would like to acknowledge that the University is on Traditional Mi'kmaq Territory. The Elders in Residence program provides students with access to First Nations elders for guidance, counsel and support. Visit or e-mail the Indigenous Student Centre (1321 Edward St) (elders@dal.ca).

Information: https://www.dal.ca/campus_life/communities/indigenous.html

Important Dates in the Academic Year (including add/drop dates)

https://www.dal.ca/academics/important_dates.html

University Grading Practices

https://www.dal.ca/dept/university_secretariat/policies/academic/grading-practices-policy.html

Student Resources and Support

Advising

General Advising https://www.dal.ca/campus_life/academic-support/advising.html

Science Program Advisors: <https://www.dal.ca/faculty/science/current-students/academic-advising.html>

Indigenous Student Centre: https://www.dal.ca/campus_life/communities/indigenous.html

Black Students Advising Centre: https://www.dal.ca/campus_life/communities/black-student-advising.html

International Centre: https://www.dal.ca/campus_life/international-centre/current-students.html

Academic supports

Library: <https://libraries.dal.ca/>

Writing Centre: https://www.dal.ca/campus_life/academic-support/writing-and-study-skills.html

Studying for Success: https://www.dal.ca/campus_life/academic-support/study-skills-and-tutoring.html

Copyright Office: <https://libraries.dal.ca/services/copyright-office.html>

Fair Dealing Guidelines <https://libraries.dal.ca/services/copyright-office/fair-dealing.html>

Other supports and services

Student Health & Wellness Centre: https://www.dal.ca/campus_life/health-and-wellness/services-support/student-health-and-wellness.html

Student Advocacy: <https://dsu.ca/dsas>

Ombudsperson: https://www.dal.ca/campus_life/safety-respect/student-rights-and-responsibilities/where-to-get-help/ombudsperson.html

Safety

Biosafety: <https://www.dal.ca/dept/safety/programs-services/biosafety.html>

Scent-Free Program: <https://www.dal.ca/dept/safety/programs-services/occupational-safety/scent-free.html>

Dalhousie COVID-19 information and updates: <https://www.dal.ca/covid-19-information-and-updates.html>