

Department of Biology Course Outline

Fall 2024, SC/BIOL 3110 Section A 3.00,
Molecular Biology I: Nucleic Acid Metabolism

Course Instructor: Charlotte de Araujo

How to address me: Prof. Charlotte

Personal Pronouns: (she/her/hers)

Email: cdearauj@yorku.ca

Course Email:

Note: If you have a question or would like to talk, you can visit me during student hours, or approach me before/after class. I will try to respond to emails within two working days (not including holidays/weekends), however this is not always possible, so please be patient.

Please remember to exercise proper etiquette in any correspondence:

- Always use your yorku.ca email address - email from other sources may be filtered out.
- Include the course code, section, and a brief indication of topic in the subject line.
- Include your full name and student number at the end of each email so that we can identify you.
- Please use full sentences and proper spelling and grammar for readability.
- Please do not use the eClass Messenger for contact. This system is not used for this course.
- Please note that course related issues will not be acknowledged/resolved over the phone.

It is the students' responsibility to check the eClass website frequently for course related information/updates from the Instructor (via yorku email address).

The instructor will not reply to questions about the course/course material 24 hours prior to the start of the midterm/final exam.

Use reputable sources for course information (e.g. eClass website). For more information, please see <http://www.yorku.ca/webclass/module4a.html>

What are 'Student Hours'?

Student hours are dedicated times through the week for the course instructor and possibly TAs to meet with YOU. Pop in to introduce yourself, ask questions about the course, or discuss content from the course.

Student Hours: Please review eClass for more information.

Prerequisites: SC/BIOL 2020 3.00, SC/BIOL 2021 3.00, SC/BIOL 2040 3.00, and SC/BIOL 2070/2071 3.00

Office Location: 102B Life Sciences Building (LSB)

Class Times: Please consult York University Timetable for room locations.

Study Spaces on Campus:
<https://currentstudents.yorku.ca/study-spaces>

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Land Acknowledgement

York University recognizes that many Indigenous Nations have longstanding relationships with the territories upon which York University campuses are located that precede the establishment of York University. York University acknowledges its presence on the traditional territory of many Indigenous Nations. The area known as Tkaronto has been care taken by the Anishinabek Nation, the Haudenosaunee Confederacy, and the Huron-Wendat. It is now home to many First Nation, Inuit, and Métis communities. We acknowledge the current treaty holders, the Mississaugas of the Credit First Nation. This territory is subject of the Dish with One Spoon Wampum Belt Covenant, an agreement to peaceably share and care for the Great Lakes region.

Course Description, Assessment, & Important Dates

Course Description

Discussion of the metabolism of DNA and RNA, including the physical-chemical properties of nucleic acids; DNA-protein interactions; chromosome structure; nucleic acid replication, repair and recombination; recombinant DNA technology. Three lecture hours. One term. Three credits.

Evaluation

Research about learning strongly suggests that the most important factor in learning is doing the work of reading, writing, recalling, practicing, synthesizing, and

analyzing. Learning happens best when people actively engage with material on a consistent basis, and that is why we have high standards in this course. We are confident that, with appropriate effort, you **ALL** can meet those standards. When possible, we also try to reduce unintentional bias in grading by, for example, grading assignments one question at a time (grading all of question 1 before grading any of question 2), grading anonymously, and using rubrics. These also help improve consistency in marking.

ALL lecture material (including verbal and extra information written on the chalkboard etc) are considered testable material for course assessments (e.g. midterms and final exams).

Please note, missed work is not the responsibility of the course director if a student enrolls following the first day of classes. It is the students' responsibility to review the course content and course policies and resources outlined on eClass.

Evaluation Breakdown

Two midterm tests, each worth 25% of the overall mark

Activities 10% (e.g. iClicker, online eClass quizzes)

Final exam, worth 40% of the overall mark

Note: Final exam is cumulative but weighted (usually > 65% of questions is on material post midterm 2)

Midterms

Detailed information will be provided on eClass closer to each test.

Policy for a Missed Term Test | Built-in Accommodation

Built into the lecture assessment scheme, is accommodation for various unexpected situations (illness, technological difficulties, other life emergencies, etc.) with certain conditions, as described below:

- The weight of the missed midterm test score (scores) will be automatically transferred to the final exam. No notification or documentation is required. Given this accommodation, please note that there are no makeup term tests.
- Similarly, you will not be permitted to re-write any midterms.

Activity Component

Activities vary and are designed to enhance your learning. When used properly, the activity component can help you stay on track, help you understand the material, and help you identify what you do not understand. If you do not complete this assessment, please note that your grade for this component will not be redistributed.

Policy for a Missed Activity | Built-in Accommodation

Built into the assessment scheme, is accommodation for various unexpected situations (illness, technological difficulties, other life emergencies, etc.) with certain conditions, as described below:

- The lowest 20% of your activity points will be automatically dropped from your grade. This includes zeroes or missed activities. No notification or documentation is required, therefore please do not contact the instructor. Emails regarding missed activities/extension requests will not receive a response.

Final Exam

The in-person exam will be cumulative and will take place during the Final Exam period. The date and time of the exam will be announced by the Registrar's Office. It is the student's responsibility to check the Registrar's Office website for final exam schedule.

The final exam will not be open book, but students will be able to go back and forth in the exam and change their answers during the allotted time period. Students are not allowed to consult or communicate with other students during any assessment (e.g., final exam). Evidence that students have collaborated during final exams will be followed up as a breach of the academic honesty policy. In-person assessments must be completed at York University. You will not be able to re-write the final exam. More information about the exam will be provided towards the end of the semester.

Policy for a Missed Final Exam

- If you miss the final examination, you must petition for deferred standing with appropriate documentation. The decision to grant deferred standing will be made by the appropriate petitions committee and not the instructor. Instructors may not grant deferred standing via a Deferred Standing Agreement Form (DSA).
- The format of the deferred final exam for this course may be essay, short answer, multiple choice, or a mix of these options.
- The instructor will not reply to questions about course material in the 24 hours prior to the start of final exams/final deferred exams.
- We appreciate that grades are important to everyone. To be fair and consistent with the entire class, individual grades are not negotiable. These email requests will not be addressed. We cannot provide "extra credit" assignments. Grades are only open to re-evaluation in case of a grading error. Please see reappraisals below.

Reappraisals

- If you think a lecture component was marked incorrectly, you must submit a written paragraph detailing your rationale to the lecture email noted above, no later than 5 days after receiving your mark. To consider your request, your rationale must be based on academic grounds. This means that you must make a valid

academic argument for why your answer is correct – statements such as “this grade does not reflect my knowledge” or “I really studied hard and I deserve a better grade” are not academic grounds. If it is determined that you have provided sufficient academic grounds, the assessment will be regraded. Please note that re-marking can result in the mark being raised, confirmed, or lowered. Also note that the whole assessment might be regraded.

General Grading Guidelines

- Grades will be posted when they are available.
- There are no “extra credit” assignments.
- Grades are not retained on eClass if you switch between sections. Please keep this in mind in case you elect to change sections.
- Please note that it is the responsibility of the student to review all information on eClass. Therefore, email or meeting requests for grade boosts or extra credit or rounding of grades will not receive a response.
- As grades are shared on eClass for all students, requests for individualized course breakdowns will not receive a response.

Important Dates

Midterm 1: Oct 8, 2024 (Scheduled during lecture time)

Midterm 2: Nov 12, 2024 (Scheduled during lecture time)

Final exam: To be scheduled within the official exam period

Drop Deadline: Nov 8, 2024 (last day to drop without course on transcript)

Course Withdrawal: December 3, 2024 (course still appears on transcript with ‘W’)

Learning Materials & Course Resources

Resources

No specific text required. The textbooks listed below are optional resources. Some students might find either of the following optional textbooks helpful.

Optional: Molecular Biology of the Gene, 7th Ed, Watson et al

Optional: Nelson and Cox (2021). Lehninger *Principles of Biochemistry*. 8th Edition. Macmillan Learning.

Other readings and resources may be assigned during the course and will be made available to you.

Course Websites






- This course uses an eClass site: <http://eclass.yorku.ca>
- It is necessary to refer to the eClass sites daily to remain up to date with course progress and developments.

iClicker Response System

- Needed for in-class participation (part of the Activity grade).
- Via mobile device or computer.
- Registration details available on lecture course website.
- Free of charge

Other Course Resources

- Access to a computer with reliable internet. If needed, you may be able to borrow a laptop: <https://www.yorku.ca/bettertogether/2020/03/19/register-to-borrow-a-laptop-from-york-u/>
- The course also utilizes Zoom video conferencing. Please note that any access to Zoom, whether through desktop client or web browser, should be done through [Passport York's SSO for authentication](#).

 An internet-enabled computer to access eClass and materials	 Zoom software installed on computer	 Access to reliable internet	 Webcam	 Microphone
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Note: If you don't have access to a computer, webcam, microphone, consider [financial aid from York](#), and [single workspaces available for student use on campus at the library](#). (<https://www.library.yorku.ca/web/ask-services/printing-and-computing/computing/public-computers-labs/>)

Policy for Recording Lectures

Photographs or video recordings of any portion of the lectures (including slides) are not permitted. Please see the Copyright Information Section.

Audio recordings are permitted provided they are used as a personal study aid only. They may not be sold, passed on to others, or posted online. Lectures can only be recorded from your seat. No recording devices are permitted at the front of the room, including front table(s), the lectern, and computer area.

Lectures will be recorded by your instructor when circumstances permit. However, if a recording fails due to technology problems, human error, or any other reason, the course instructor will not be able to re-record the material. Lectures presented by PowerPoint slides will be recorded, but note that lecture material presented during lectures using other methods, such as on the blackboard or by Doc cam demonstration (often important and may be on exams) will not be captured.

Whether recorded by the instructor or students, the Copyright Information described in this outline strictly apply to such recordings.

Couse Content & Learning Outcomes

Learning Outcomes

Upon successful completion of this course, students should be:

- Knowledgeable in nucleic acids-related properties and concepts
- Knowledgeable in the molecular details of DNA structure, topology, and their impact on biological processes such as DNA replication
- Knowledgeable in DNA-based genomes and how genomes are organized
- Knowledgeable in how genome organization and chromatin structure impact on various biological processes and functions
- Knowledgeable in experimental techniques, and interpretation of results
- Appreciative of the experimental nature of scientific discoveries
- Able to apply knowledge and critical thinking in exams

Course Content

TOPICS COVERED INCLUDES:

1. DNA basics: history, chemical composition and physical properties of nucleic acids
2. RNA structures and functional RNAs
3. DNA topology and topoisomerases
4. DNA synthesis and replication
5. Telomeres and telomerase
6. Methods for studying DNA and molecular biology techniques
7. Genome organization/packaging of prokaryotes and eukaryotes
8. Chromatin/chromosome states and long-range chromosome interactions in interphase genomes

9. Regulation of genome replication
10. Epigenetics and chromatin regulation

Course & University Policies

Summary: Course Policies and other information

1. All students must strictly abide by York's Academic Honesty and Integrity policies (see University Policies section in this course outline).
2. Students, TAs and the Course Director are all expected to communicate or interact with one another in a respectful and cordial manner. Any form of verbal or cyber bullying will **NOT** be tolerated and can result in expulsion from class and/or course.
3. In the event of missing one or both midterms, the weight of this midterm will be distributed to the final exam. **No makeup exam will be available for midterms.** In the event that a student missing all three assessments – midterms, final exam), the student will be **required to petition** in order to take a deferred final exam.
4. Students who do not write the final exam but have completed both midterms must submit a Deferred Standing Agreement form within 5 business days of the missed exam. The DSA must be accompanied by the documentation supporting the absence. If your DSA is approved, you will be given an opportunity to write the deferred final exam at some point. If your DSA is denied, you will need to petition the course to your home faculty. If you miss the deferred final exam (for any reason), you will be required to file an academic petition to your home faculty. Please check out the Registrar's Office Deferred Standing FAQs (http://www.registrar.yorku.ca/services/ds_faq.htm) for more details.
5. In order to be fair and consistent to the entire class, individual grades are non-negotiable. Contact the Course Director about marks **ONLY** if there is a clear error in your mark (calculation, clerical, etc.) by the deadline.
6. All lecture material (posted lecture slides and recordings) are copyrighted and **NOT** to be distributed without permission. Students are also **NOT** allowed to copy, record, share or distribute any midterm or final exam contents.

University Policies

Academic Honesty and Integrity

York students are required to maintain the highest standards of academic honesty and they are subject to the Senate Policy on Academic Honesty (<http://secretariat-policies.info.yorku.ca/policies/academic-honesty-senate-policy-on/>). The Policy affirms the responsibility of faculty members to foster acceptable standards of academic conduct and of the student to abide by such standards.

There is also an academic integrity website with comprehensive information about academic honesty and how to find resources at York to help improve students' research and writing skills, and cope with University life. Students are expected to review the materials on the Academic Integrity website at - <http://www.yorku.ca/academicintegrity/>

Important - A note from the Faculty of Science Committee on Examinations and Academic Standards:

Numerous students in Faculty of Science courses have been charged with academic misconduct when materials they uploaded to third party repository sites (e.g. Course Hero, One Class, etc.) were taken and used by unknown students in later offerings of the course. The Faculty's Committee on Examinations and Academic Standards (CEAS) found in these cases that the burden of proof in a charge of aiding and abetting had been met.

Accordingly, to avoid this risk, students are urged **NOT** to upload their work to these sites. Whenever a student submits work obtained through a third-party site (e.g. Course Hero, One Class etc.), the submitting student will be charged with plagiarism and the uploading student will be charged with aiding and abetting.

Note also that exams, tests, and other assignments are the copyrighted works of the professor assigning them, whether copyright is overtly claimed or not (i.e. whether the © is used or not). Scanning these documents constitutes copying, which is a breach of Canadian Copyright law, and the breach is aggravated when scans are shared or uploaded to third party repository sites.

Penalties associated with charges of Academic Misconduct can include zero on the assignment, letter grade reduction, failure in the course, notation on the transcript, suspension. Please Do Not Cheat, it is not worth it, and ultimately hurts your learning.

Student Assistance & Accessibility Service
Assistance for Students (Academic and Well-Being)

Academic Advising*: <https://www.yorku.ca/science/academic-advising/> * Departments also offer program-specific advising. Check with your Department's Undergraduate Office.

Centre for Human Rights, Equity, and Inclusion: <https://rights.info.yorku.ca>

Centre for Indigenous Students Services: <https://aboriginal.info.yorku.ca/>

Food Access, Funding, & Supports/Resources: <https://students.yorku.ca/food>

Good2Talk 24-hour Ontario Student Helpline: 1-866-925-5454 /Text: GOOD2TALKON to 686868

Keep.meSAFE: <https://myssp.app/keepmesafe/ca/home>

Learning Commons (general academic learning supports including library research, time management, study skills, career planning, etc.): <https://learningcommons.yorku.ca/>

Peer Assisted Study Sessions (PASS): <https://www.yorku.ca/colleges/bethune/get-help/pass/>

Peer Tutoring: <https://www.yorku.ca/colleges/bethune/get-help/peer-tutoring/>

Sexual Violence Response and Support: <https://thecentre.yorku.ca>

Student Counselling, Health & Well-being: <https://counselling.students.yorku.ca/>

Support Services for International Students:
<https://yorkinternational.yorku.ca/international-student-support/>

Writing Services: <https://www.yorku.ca/colleges/bethune/get-help/writing/>

York University Student Services: <https://family.yorku.ca/student-services/#SCD>

York University Student Well-being Resources: <https://www.yorku.ca/well-being/resources/students/>

Accessibility

York University is committed to principles of respect, inclusion, and equality of all persons with accessibility needs across campus. The University provides services for students with accessibility needs (including physical, medical, learning, and psychiatric needs) needing accommodation related to teaching and evaluation methods/materials. These services are made available to students in all Faculties and programs at York University.

If you are in need of these services, please register with accessibility services as early as possible to ensure that appropriate academic accommodation can be provided with advance notice. You are encouraged to schedule a time early in the term to meet with each professor to discuss your accommodation needs. Please note that registering with accessibility services and discussing your needs with your professors is necessary to avoid any impediment to receiving the necessary academic accommodations to meet your needs.

Additional information is available at the following websites:

Student Accessibility Services: <https://accessibility.students.yorku.ca>

York Accessibility Hub: <http://accessibilityhub.info.yorku.ca/>

Religious Observance Accommodation

York University is committed to respecting the religious beliefs and practices of all members of the community and making accommodations for observances of special significance to adherents. Should any of the dates specified in this syllabus for an in-class test or examination pose such a conflict for you, contact the Course Director within the first three weeks of class. Similarly, should an assignment to be completed in a lab, practicum placement, workshop, etc., scheduled later in the term pose such a conflict, contact the Course Director immediately. To arrange an alternative date or time for an examination scheduled in the formal examination periods (December and April/May), students must complete and submit an accommodation request form at least 3 weeks *before the exam period begins*.

<https://secure.students.yorku.ca/pdf/religious-accommodation-agreement-final-examinations.pdf>

Student and Instructor Conduct in Academic Situations

Students and instructors are expected to maintain a professional relationship characterized by courtesy and mutual respect. Moreover, it is the responsibility of the instructor to maintain an appropriate academic atmosphere in the classroom and other academic settings, and the responsibility of the student to cooperate in that endeavour. Further, the instructor is the best person to decide, in the first instance, whether such an atmosphere is present in the class. The policy and procedures governing disruptive and/or harassing behaviour by students in academic situations is available at <http://secretariat-policies.info.yorku.ca/policies/disruptive-andor-harassing-behaviour-in-academic-situations-senate-policy/>.

Academic accommodation refers to educational practices, systems and support mechanisms designed to accommodate diversity and difference. The purpose of accommodation is to enable students to perform the essential requirements of their academic programs. At no time

does academic accommodation undermine or compromise the learning objectives that are established by the academic authorities of the University.

University rules regarding registration, withdrawal, appealing marks, and most anything else you might need to know can be found on the university's website, here:

<https://calendars.students.yorku.ca/policies-and-regulations>

Inclusive Teaching Statement

- We are committed to fostering an environment for learning that is inclusive for everyone regardless of gender identity, gender expression, sex, sexual orientation, race, ethnicity, ability, age, class, etc.
- All students in the class, the instructor, and any guests should be treated with respect during all interactions.
- It our hope that our class will support diversity of experience, thought, and perspective.
- Please feel free to contact us via email or in person to let us know about any experiences you have had related to this class that have made you feel uncomfortable.
- We will continually strive to create inclusive learning environments and would therefore appreciate your support and feedback.
- We welcome emails or in-person communications to let us know your preferred name or pronoun.

Community Guidelines

The following values are fundamental to academic integrity and are adapted from the International Center for Academic Integrity. In our course, we will seek to behave with these values in mind. **As a teaching team we will mirror these values.**

As students, we will...	
Honesty	Honestly demonstrate our knowledge and abilities on assignments and exams Communicate openly without using deception, including citing appropriate sources
Responsibility	Complete assignments on time and in full preparation for class Show up to class on time, and be mentally/physically present Participate fully and contribute to team learning and activities
Respect	Speak openly with one another, while respecting diverse viewpoints and perspectives Provide sufficient space for others to voice their ideas
Fairness	Contribute fully and equally to collaborative work, so that we are not freeloading off others Not seek unfair advantage over fellow students in the course
Trust	Not engage in personal affairs while on class time Be open and transparent about what we are doing in class Not distribute course materials to others without authorization
Courage	Say or do something when we see actions that undermine any of the above values Accept a lower or failing grade or other consequences of upholding and protecting the above values

This class statement of values is adapted from Tricia Bertram Gallant, Ph.D.