

## Department of Biology Course Outline

### Biol 3110, Molecular Biology I: Nucleic Acid Metabolism Section A, Summer S1, 2020

#### 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. One term. Three credits.

#### Prerequisites (strictly enforced)

SC/BIOL 2020 3.00, SC/BIOL 2021 3.00, SC/BIOL 2040 3.00, and SC/BIOL 2070 3.00.

#### Course Instructor(s) and Contact Information

Dr. Peter Cheung  
Life Sciences Building, Rm 331A  
[yorkubiol3110@gmail.com](mailto:yorkubiol3110@gmail.com)  
416-736-2100 x 31322

#### Schedule

**Lectures:** Tues and Thurs, 10:00 AM – 1 PM, online via Zoom and Moodle. For more details see Course and Other information section (pg 3 of outline).

**Office Hrs:** Mon, 10:00 AM – 12:00 noon, by appointment and via Zoom

#### Evaluation

Two midterm tests worth 25% of overall mark each

Final exam worth 50% of overall mark

Final exam is cumulative but weighted

Exams will be conducted through Moodle, and will be in the format of multiple choice questions and written answer questions

#### Important Dates

**Midterm 1:** Tues, May 26<sup>th</sup>, 2020, 10 – 11:20 AM

**Midterm 2:** Tues, Jun 9<sup>th</sup>, 2020, 10 – 11:20 AM

**Final exam:** TBD

**Drop Deadline:** Jun. 8<sup>th</sup>, 2020 (last day to drop without course on transcript)

**Course Withdrawal:** Jun. 9<sup>th</sup> to Jun. 22<sup>nd</sup>, 2020 (course still appears on transcript with 'W')

## Resources

No specific text required

Relevant lectures notes and links to pre-recorded lectures will be posted on Moodle the day of the lecture. Live lectures conducted by Zoom on Tues and Thurs will be recorded and links to those will be posted on Moodle after the lectures.

A discussion forum will also be set up on Moodle for students to communicate with one another and to discuss course material. The course director will NOT participate in the forum discussions. Any specific questions for the course director should be directly emailed to [yorkubiol3110@gmail.com](mailto:yorkubiol3110@gmail.com)

## Learning Outcomes

Upon successful completion of this course, students should be:

Knowledgeable in nucleic acids-related properties and concepts

Knowledgeable in DNA-based genomes and how genomes are organized

Knowledgeable in how genome organization impacts 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. Methods for studying DNA and molecular biology techniques
6. Genome organization/packaging of prokaryotes and eukaryotes
7. Organization, dynamics and regulation of interphase genomes
8. Chromatin and histone modifications
9. Epigenetics and regulation of gene expression

## Course and Other Information

**Lecture format:** Lectures will start at 10 AM on the scheduled class dates with a live session via Zoom (links will be posted on Moodle beforehand) where the instructor will do a short recap of the previous pre-recorded lecture, explain concepts in more details, and also answer questions from students. The live sessions are intended to last about 1 hr for each class; however, this will vary depending on the lecture material and class participation, e.g. the number of student questions. After the live session, students should use the remaining scheduled class time (plus additional time if needed) to view to the next set of pre-recorded lecture material in preparation for the following class.

For example, the **first class** will consist of a short live Zoom session where the instructor will go over the lecture format and other relevant course information and policies, and answer course-related questions. After that, students should access the pre-recorded lecture 1 material via the link posted on Moodle and go over all the posted (assigned) lecture material. The next lecture will start at 10 AM of the scheduled date with a live recap/instruction session via Zoom, and after that, students should access and study the next set of pre-recorded lecture files in preparation for the next live lecture.

**Equipment needed for online learning:** As the course is delivered online, each student will need i) a computer or equivalent for accessing online material; ii) software such as Zoom to participate in the live Zoom sessions, iii) access to internet for the streamed lectures; and iv) a suitable learning environment for listening to pre-recorded lectures and for participating in the live lectures.

**Joining Zoom meetings:** Students must join Zoom meetings through Moodle or using their Passport York sign in.

**Zoom and privacy:** Part of the course is conducted live via Zoom and will be recorded for broader student access. Note that Zoom is hosted on servers in the US. If students have privacy concerns about their data, they should only provide their first name when joining a session. Note also that the system is configured such that all participants are automatically notified when a session is being recorded.

Students are reminded here that all lecture material posted online (via Moodle and Zoom) are copyrighted and they are **NOT allowed** to download, copy, or keep the recorded material. Students are also **NOT allowed** to distribute or share the online course material.

**Midterm and final exam format:** All midterms and exams are conducted through Moodle. Students should familiarize themselves with the use of Moodle and how to access online exams/quizzes. Students are required to have access to the minimum technology requirements to complete exams. Technology requirements and FAQs for Moodle can be found here: <http://www.yorku.ca/moodle/students/faq/index.html>

**Online exam proctoring:** Students should know that this course may require the use of online proctoring for exams. Students are expected to abide by York's Senate Policy on Academic Honesty (see University Policies section of this document)

**Office Hours:** Office hours are scheduled between 10 AM – 12 noon on Mondays and will be conducted via Zoom. A general link to the scheduled weekly office hour meetings will be posted on Moodle; however, students should contact the instructor via the course-specific email (see below) to pre-arrange and schedule specific meeting times.

**Email contact:** Questions requiring short answers can be asked via email up to 24 hours before a midterm or final. Please only send email questions to: [yorkubiol3110@gmail.com](mailto:yorkubiol3110@gmail.com). All other course-related communication, such as scheduling of office hours meetings, should also go through this course-specific email account.

**Expectations:** Students are EXPECTED to access and study ALL online class material (including posted lecture slides, pre-recorded lectures, and recordings of live lectures) for exam preparation. All lecture material in the pre-recorded lectures as well as those presented at the live Zoom lectures are considered testable material in midterm and final exams.

### Important Course Policies

1. As part the course is conducted live online, students must conduct themselves in appropriate and proper etiquette. Students who show disruptive behaviour will be removed and may be locked out of the class meeting.
2. As the midterms and final exam are conducted online, students must strictly abide by York's Academic Honesty and Integrity policies (see University Policies section of this course outline). In addition, students will be required to read, sign (by typing their names), and abide to 4 declaration statements at the beginning of each midterm and exam.
3. If you miss a midterm exam with a legitimate documented reason, documentation must be submitted to the course director in order to avoid receiving a grade of zero on the exam. Please fill out the absence form and append a detailed and official doctor's note (i.e. not simply a form stating the student visited a clinic) using the online submission system:  
<http://science.apps01.yorku.ca/machform/view.php?id=84113>
4. In the event of one missed midterm with a valid documented reason, the weight of this midterm will be distributed evenly between the other midterm and the final exam. **No makeup exam will be available for midterms.** In the event that a student misses more than one exam with valid documented reasons (two midterms, a midterm and a final, or all three exams), the student will be **required to petition** in order to take the deferred final exam.
5. Students who do not write the final exam, but have completed both midterms must submit a Deferred Standing Agreement form to the **Biology Undergraduate office (LSB 102)** 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. If your DSA is denied, you will need to petition the course to your home faculty. **The deferred exam may be offered as late as during the April exam session. In this case, you will not be able to finish the course and obtain the necessary credit for several months.** If you miss the deferred final (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](http://www.registrar.yorku.ca/services/ds_faq.htm)) for more details.
6. In order to be fair and consistent to the entire class, individual grades are not negotiable.
7. Students are **NOT** allowed to record or make copies of the pre-recorded lectures, nor the live lectures on Zoom, using their own recording devices. Students are also **NOT** allowed to copy, record, share or distribute any midterm or 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/>

### **Access/Disability**

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

Students in need of these services are asked to register with disability 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 disabilities 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:

Counselling & Disability Services - <http://cds.info.yorku.ca/>

Counselling & Disability Services at Glendon - <https://www.glendon.yorku.ca/counselling/>

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. Please note that 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 [Examination Accommodation Form](#) at least 3 weeks before the exam period begins. The form can be obtained from Student Client Services, Student Services Centre or online at [http://www.registrar.yorku.ca/pdf/exam\\_accommodation.pdf](http://www.registrar.yorku.ca/pdf/exam_accommodation.pdf)

### **Student 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/>