Department of Biology Course Outline

SC/BIOL 3110 3.00
MOLECULAR BIOLOGY I: NUCLEIC ACID METABOLISM
Section B / Fall 2019

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.

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 Instructors and Contact Information

Course Director: Dr. Kyle Belozerov
CB216
vbelozer@yorku.ca

Office Hours: TBA

Schedule

Lectures: Tuesdays 6:00 – 9:00 pm, Lassonde C

Evaluation

Midterm 1*	25%	**Sunday, October 6 at 1:00 – 2:20 pm** (location TBA)
Midterm 2*	25%	**Sunday, November 10 at 1:00 – 2:20 pm** (location TBA)
Final Exam	50%	**Cumulative (all of the material covered in the course will be tested)**

- Each section of the course will have approximately equal representation over the above 3 evaluations.
- A date during the December exam period will be scheduled by the Registrar's Office and published sometime in November.

*** Special Midterm Policies. Please read carefully!**

1) In the Fall of 2019 BIOL3110 is taught as two sections, A and B. Students in the two sections will have their midterms and the final exam at the same time. Common midterms will take place on Sunday (see the dates and times above). **It is your responsibility to make sure your schedule permits attending the two Sunday midterms.** Under exceptional circumstances (if

you have a legitimate documented scheduling conflict) you may be allowed to write a midterm **on the same date** but at a different time. Please contact the course director well ahead of time to arrange to write a midterm at a different time. All requests for such accommodations must be received **two weeks ahead** of the midterm to be considered.

2) Midterms and the final exam may be composed of both multiple-choice and short-answer questions. Both midterms and the final will be processed using Crowdmark, and marked midterms will be made available to you for viewing online. Please see instructions on how to submit re-marking requests under "Course Policies". Final exam will be available for viewing in the Biology office, but will not be sent to you directly via Crowdmark.

Important Dates

Classes start:	September 4
Fall Reading Week	October 12 - 18
Drop Deadline:	November 8 (Last day to drop the course without receiving a grade)
Course withdrawal:	November 9 - December 3 (Course still appears on transcript, but no grade will be shown)
End of classes:	December 3
Final Exam:	TBA, during the December exam period (Dec 5 – 20)

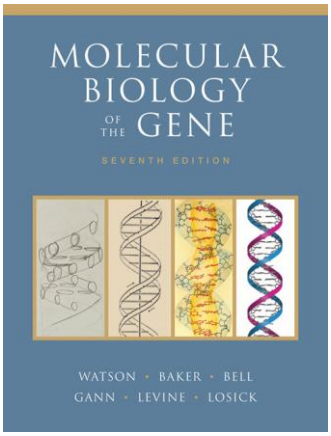
For additional important dates such as holidays, refer to the "Important Dates" section of the Registrar's Website.

Resources

1. Textbook

No specific text required.

Optional: **Molecular Biology of the Gene**, 7th Ed
by J.D. Watson and others
(A copy of this text book is on reserve at Steacie Library)
GENOMES, 2nd Edition (2002) T.A. Brown
(http://www.ncbi.nlm.nih.gov/books/NBK21128/)



2. Moodle Site:

Announcements, grades, and other course information are communicated through the course Moodle site. All lecture slides and other relevant material will be posted on Moodle as the course proceeds.

Learning Goals & 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

Additional learning objectives may be provided for individual topics throughout the course.

Course Content

TOPICS COVERED:

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 prokaroytes and eukaryotes
7. Organization, dynamics and regulation of interphase genomes
8. Regulation of genome replication
9. Chromatin and histone modifications
10. Epigenetics and regulation of gene expression

TOPICS WILL BE COVERED IN THESE CHAPTERS AND OTHER SOURCES:

Molecular Biology of the Gene, 7th Ed: Chapters 2, 4, 5, 7, 8, 9

GENOMES 2: Chapters 1 – 11

Experiential Education and E-Learning

E-Learning components:

- Course materials available on Moodle
- Online textbook resources
- CLASS FORUM: I will set up a class discussion forum on Moodle. It is open to all students in class and is meant for you to post questions or requests to one other. As the course director, I will NOT participate in the forum discussions. Any lecture-related questions for me should be asked by email (see below) or in person before, during, or after class.

Course Policies

1. E-MAIL ETIQUETTE:

- Use your YorkU email address as other email addresses (e.g., Hotmail) are filtered out by the university's email system and do not always reach their intended recipient. **Please do not use the Moodle email function or respond to course announcement emails.**
- I will try to respond within 2 business days, but this is not always possible. I typically do not check email between 5 pm and 9 am, nor on the weekends.
- **Subject line:** your name, student number and a brief indication of topic (*e.g.,* 'Question regarding gene regulation). I receive a lot of email and this practice helps me sort emails efficiently. **Emails without the required information will not receive a response.**
- **Please include your NAME at the end of each email.**
- Due to the size of the class (200+ students), I will not be able to offer individual tutoring by e-mail. **If your question requires me to type up several paragraphs to essentially repeat what was discussed in class, I will not be able to respond.** Please attend classes regularly and take careful notes during lectures. If you need extra help, please consider attending my office hours.

2. MISSED MIDTERMS/FINAL:

- If you miss a midterm test with a legitimate documented reason, documentation must be submitted to me (Dr. Belozerov) in order to avoid receiving a grade of zero on the test. 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

- 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 evaluation 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.
- **ALL students** who miss the **FINAL EXAM** MUST submit a deferred standing agreement (DSA) to the Biology Undergraduate office (LSB102) 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.

3. RE-MARKING REQUESTS:

- If you believe a written answer on a test was marked incorrectly you must submit a written rationale detailing the suspected error through Moodle (instructions to be given at a later date) within 1 week of receiving a Crowdmark link to your marked paper. I will aim to address all re-marking requests within 1-2 weeks of receiving them.
- **NOTE: re-marking can result in the mark being raised, confirmed, or lowered.**
- To be fair and consistent with regards to the entire class, **individual grades are NOT negotiable**. We cannot provide 'extra credit' assignments. **Marks for assignments and tests are not 'rounded' or 'bell-curved'.** Contact me (vbelozer@yorku.ca) about marks **ONLY if there is a clear error in your mark (calculation, clerical, etc.) within ONE (1) week of the test score being made available to you.** It is highly unlikely that you will receive a response regarding any other mark-related queries.

4. ACCOMMODATIONS:

- **Submit a scan or photo of CDS Accommodation letters via the Biology Department's Online Document Submission System 102 LSB as soon as possible.**
- Please make the instructors (and TA Coordinator if tutorials are affected) aware of any religious observance conflicts occurring at any point during the term, for which accommodations will be required as soon as possible.
- **Please note:** "Senate policy states that students are expected to monitor their progress in courses, taking into account their personal and academic circumstances, and to make the necessary adjustments to their workload to meet the requirements and deadlines." (from Senate Policy of Students' Responsibilities in the Petition/Appeal Processes).
- Students with physical, learning, or psychiatric disabilities who require reasonable accommodations in resources or evaluation methods are encouraged to consult with the Office for Persons with Disabilities (OPD) and ensure that requests for appropriate accommodations are arranged with the Section Instructor early in the term.

5. ACADEMIC INTEGRITY:

- Students should be familiar with, and follow York University's policies regarding academic integrity. See: https://spark.library.yorku.ca/academic-integrity-what-is-academic-integrity/
- 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, since the uploading students had been found in all cases to be wilfully blind to the reasonable likelihood of supporting plagiarism in this manner. Accordingly, to avoid this risk, students are urged not to upload their work to these sites. Whenever a student submits work obtained through Course Hero or One Class, 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.

6. RECORDING LECTURES:

- Students are allowed to record lectures using their own voice recording devices. However, taking pictures or video recording of lecture slides or exam questions discussed in class will NOT be allowed. Lectures **may be** recorded by the instructor and posted on Moodle. An announcement will be made in the beginning of the semester if the instructor chooses to offer recordings.

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. 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.

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 at Keele
Counselling (Glendon)
York Accessibility Hub

Ethics Review Process

York students are subject to the York University *Policy for the Ethics Review Process for Research Involving Human Participants.* In particular, students proposing to undertake research involving human participants (e.g., interviewing the director of a company or government agency, having students complete a questionnaire, etc.) are required to submit an *Application for Ethical Approval of Research Involving Human Participants* at least one month before you plan to begin the research. If you are in doubt as to whether this requirement applies to you, contact your Course Director immediately.

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 an Examination Accommodation Form, which can be obtained from Student Client Services, Student Services Centre.

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 endeavor. Further, the instructor is the best person to decide, in the first instance, whether such an atmosphere is present in the class. Click here for the policy and procedures governing disruptive and/or harassing behavior by students in academic situations.