

BIOLOGY 3000 Section A
Gene Expression and Regulation

Spring 2012

Instructor: Dr. Tony Russell

Lectures: Monday, Wednesday and Friday, 10:00-10:50 am, UHall C610

Office: D874 University Hall

Laboratory: C832, C834. University Hall

Phone: 329-2696

Email: tony.russell@uleth.ca

Office Hours: Students are advised to first arrange an appointment via Email or phone call. Alternatively, you may also drop by my office/lab weekdays from 2:00 - 3:00 pm.

Required Course Textbook: Molecular Biology, 5th edition, Robert F. Weaver, McGraw-Hill, New York, ©2012. Students will be responsible for reading and mastering all relevant material in the chapters specified in the course content outline.

Course Website: The detailed lecture notes and other relevant course material will be posted and available for download at the Biology 3000 course website located at:
<http://people.uleth.ca/~tony.russell/Biology3000A>

Each lecture will be posted as a PDF file shortly before its oral presentation. You will also be directed to this website if you follow the appropriate links through the University of Lethbridge, Web Tools, Class Web Sites for Fall 2011.

Pre-requisites: All students who are registered in this course **must have successfully completed Biology 2000**. There will be **no exceptions** and any student not having this pre-requisite **will be removed from the course** after the add-drop period.

COURSE CONTENT AND INFORMATION

Tentative Course Content (time permitting)

I. Molecular Biology Overview

Chapters 2 and 3. The molecular nature of genes and gene function introduction. **Students should review the relevant material covered in the Biology 1010 and Biology 2000 courses.**

II. Molecular Cloning

Chapter 4. Restriction enzymes, cloning and vectors, PCR-based amplification methods.

III. Transcription in Prokaryotes

Chapters 6 and 7. Transcription in bacteria. Transcriptional elements, stages of transcription, transcriptional control.

IV. Transcription in Eukaryotes

Chapters 10, 11, 12, 13. Eukaryotic RNA polymerases and their promoters, transcription factors, transcription activators, chromatin structure and gene activity.

V. Post transcriptional events

Chapters 14, 15, 16. RNA splicing, messenger RNA processing, ribosomal RNA processing, tRNA processing, RNA editing, RNA interference.

VI. Translation and the ribosome

Chapters 17, 18, 19. Translation initiation, elongation and termination, ribosomes, transfer RNA.

GRADE COMPOSITION

5% - **Quiz 1** – Wednesday, January 25th, 2012

5% - **Quiz 2** – Wednesday, February 29th, 2012

25% - **Midterm Exam 1** – Monday, February 6th, 2012

25% - **Midterm Exam 2** – Friday, March 16th, 2012

40% **Final Exam** – Wednesday, April 25th, 9:00 am – 12:00 pm

ADDITIONAL IMPORTANT NOTES

Students will be responsible for mastering **both the information presented in the lectures and the relevant assigned chapters of the textbook**. The lecture material will highlight the most important aspects of the textbook chapters and will also provide some additional material from alternative sources; therefore, attendance at all lectures is strongly recommended.

Although the detailed material in Chapter 5 will not be specifically discussed in the lectures, students are strongly encouraged to also read and understand this chapter as it describes several of the experimental techniques that are referred to in other sections of this course.

A grade of zero will be assigned for any missed quiz, midterm or final exam unless a valid official excuse is provided. This excuse may be in the form of a doctor's certificate of illness dated on or before the date of the missed exam. Only under these circumstances may a supplemental exam be written. No retroactive documentation will be accepted as a valid excuse.

Final Exam. You must write the final exam at the time set by the Registrar. You must consult with Academic Advising to request a change – instructors cannot reschedule finals.

You may write your exams and quizzes in pencil; however, **examination answers written in pencil will not be remarked.**

GRADING SYSTEM:

<u>Letter Grade</u>		<u>Percent</u>	<u>Grade Point</u>
A+	Excellent	91-100	4.0
A		86-90.9	4.0
A-		80-85.9	3.7
B+	Good	77-79.9	3.3
B		74-76.9	3.0
B-		70-73.9	2.7
C+	Satisfactory	67-69.9	2.3
C		64-66.9	2.0
C-		60-63.9	1.7
D+	Poor	56-59.9	1.3
D	Minimal Pass	50-55.9	1.0
F	Failure	49 or less	0