



Course Outline

UNIVERSITY STUDIES

**BIOL 107
INTRODUCTION TO CELL BIOLOGY
FALL 2012**

**3 CREDITS
3 HOURS LECTURE, 3 HOURS LABORATORY PER WEEK**

INSTRUCTOR: DR. BLAINE LEGAREE

INSTRUCTOR:	Dr. Blaine Legaree		
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OFFICE NUMBER:	S209D		
OFFICE HOURS:	Tuesdays	10:00 – 11:00 AM	
	Wednesdays	9:00 – 10:00 AM; 12:00 – 1:00 PM	
	Fridays	9:00 – 11:00 AM	

HOURS OF INSTRUCTION:	Lectures:	Tuesday	9:00 – 9:50 AM	Room 228
		Wednesday	3:00 – 3:50 PM	Room S112
		Friday	2:00 – 2:50 PM	Room 224
	Laboratory:	Thursday	2:00 – 4:50 PM	Room 234

COURSE DESCRIPTION:

The properties and functions of organisms depend upon those of individual cells. To understand organisms, it is necessary to understand cells. The course will begin with an examination of the natural origin of life, and of cells. There will be an introduction to cellular structure and function, beginning with prokaryotic cells, followed by eukaryotic cells. This will be followed by an examination of cell respiration, photosynthesis, and a discussion of how cell compartmentalization is important for efficient cell functioning. Control of cell functioning and structure will be explored through an examination of the molecular nature and expression of the genetic material. The course will finish with an introduction to the application of genetic knowledge in genetic engineering and biotechnology.

PRE-REQUISITES: Biology 30 and Chemistry 30

COURSE OUTCOMES:

Upon successful completion of this course, the student will be able to:

1. Apply knowledge of the structure of molecules and cells to explain how energy, matter, and information move within and between cells of eukaryotes and prokaryotes.
2. Demonstrate a number of important laboratory techniques used in the study of cell and molecular biology.
3. Apply the scientific method to generate and analyze data obtained in the lab.
4. Demonstrate written communication skills through exams and laboratory assignments.

REQUIRED RESOURCES:

1. **Campbell Biology, 9th Ed.** Reece, J.B., Urry, L.A., Cain, M.L., Wasserman, S.A., Minorsky, P.V. and Jackson, R.B. 2011. Benjamin Cummings Publishing Co.
Available as eTextbook digital formats at MasteringBiology.com and Coursesmart.com
2. **Biology 107 Laboratory Manual, Fall 2012 Edition.** Keyano College
3. **Safety Requirements:** You will require a lab coat and WHMIS/Biosafety training.

TOPICS TO BE COVERED:

Please Note: This course outline may be modified to facilitate unforeseen time constraints. Date and time allotted to each topic is subject to change.

<u>Lecture Topics</u>	<u>Text Concepts</u>	<u>Text Pages</u>
1. Life, the Universe and Everything (An Introduction to the Cell and the Scientific Method)	1.1-1.4, 26.6	Ch 1: pg 1-25; Ch 26: pg 551-553
2. Chemistry, Water, and Macromolecules	2.1-2.4, 3.1-3.2, 4.1-4.3, 5.1-5.5	Ch 2: pg 30-43; Ch 3: pg 46-52; Ch 4: pg 58-66; Ch 5: 68-89
3. How Do We Study Cells?	6.1	Ch 6: pg 94-98
4. Biological Membranes, Cell Walls and Cell Surfaces	7.1-7.5, 6.7, 27.1, (48.2-48.4)	Ch 7: pg 125-139; Ch 6:pg 118-122; Ch 27: 556-558; (Ch.48: pg 1050-59)
5. Prokaryotic Cells (Bacteria and Archaea)	26.1, 27.1-27.6	Ch 26: pg 536-540; Ch 27: pg 556-573
6. Eukaryotic Cells: Cellular Compartments and Organelles	6.2-6.5	Ch 6: pg 98-111
7. Cytoskeletons & Molecular Motors	6.6, (50.5)	Ch 6: pg 112-118; Ch 50: pg 1105-11
8. Cellular Order and Energetics	8.1-8.3	Ch 8: pg 142-151
9. Enzymes: Catalysts of Life	8.4-8.5	Ch 8: pg 151-160
10. Cellular Respiration and Fermentation	9.1-9.6	Ch 9: pg 163-181
11. Photosynthesis	10.1-10.4	Ch 10: pg 184-203
12. The Cell Cycle and Cell Division	12.1-12.3, 13.1-13.4, 16.3, 18.5	Ch 12: pg 228-243; Ch 13: pg 248-260 Ch 16: 320-323; Ch 18: pg 373-377
13. DNA and the Molecular Basis of Inheritance	16.1	Ch 16: pg 305-310
14. DNA Replication and Repair	16.2	Ch 16: pg 311-319
15. The Genetic Code	17.1	Ch 17: pg 325-331
16. Transcription (From DNA to RNA)	17.2-17.3	Ch17: pg 331-336
17. Translation (From RNA to Protein)	17.4-17.6	Ch 17: pg 337-348
18. Control of Gene Expression	18.1-18.4	Ch 18: pg 351-373
19. Recombinant DNA Technology and Forensics	20.1-20.4	Ch 20: pg 396-423
20. Viruses and Other Self-Replicating Entities	19.1-19.3	Ch 19: pg 381-394

ADDITIONAL RESOURCES:

MOODLE: Go to <http://ilearn.keyano.ca>

This course is supported through **Moodle**. The course syllabus, lecture notes, study questions, weblinks, PowerPoints and other electronic resources will be made available to you on **Moodle**.

* *It is recommended that you download or print the lecture notes **before** coming to class.*

TEXTBOOK WEBSITES: <http://www.campbellbiology.com>
<http://www.masteringbiology.com>

FACEBOOK GROUP: Join the Facebook Group for this class (“**Biol 107 Keyano**”) to discuss course topics, post comments, watch videos, and share links of interest.

EVALUATION:

Midterm Exam I	15%	Tues, Oct 9, 2012
Midterm Exam II	15%	Tues, Nov 6, 2012
Laboratory Component	35%	<i>See the lab manual for details</i>
Final Exam	35%	<i>Date to be set by the Registrar</i>

Examinations:

- Exams are based on material covered in lectures only. However, note that there is considerable overlap between the material taught in the lecture and the lab. Anything taught in both the lecture and the lab will be tested on lecture exams (*these are important concepts!*).
- Exams are broken down into portions of multiple choice questions, short answer questions and long answer questions. The final exam is cumulative, but will focus on material covered following the second midterm.
- The final lecture examination **must** be written in order to complete this course.
(**Note: travel plans will not be accepted as a valid excuse for missing a final exam.**)
- *Students should consult:* <http://keyano.ca/current-students/students/exams>

Laboratory:

- The laboratory component is detailed in the course laboratory manual and includes written assignments, reports and a final lab exam.
- **Attendance in the laboratories is compulsory and all absences must be documented.** Absence from any two (2) laboratory periods without a valid reason will result in the student being required to withdraw from the course (a grade of WF will be assigned if this occurs after the final permissible date for withdrawal without penalty).
- Laboratory assignments are to be the product of **each student's own work**. Although you may work in pairs during the lab period and discuss the assignment prior to doing the work, you are expected to do the actual work by yourself, **independently** of any other student, including your lab partner. Where, in the opinion of your instructor, there has been collaboration among two or more students in the preparation of laboratory assignments, the grade will be divided between the participants or a grade of zero will be given. Do not share assignments, nor loan them to anyone.
- **Late assignments will be penalized 10% per day late and will not be accepted if more than 5 days late.**

GRADING SYSTEM:

Letter Grade	Description	Grade Points
A+		4
A	Excellent	4
A-		3.7
B+		3.3
B	Good	3
B-		2.7
C+		2.3
C	Satisfactory	2
C-		1.7
D+		1.3
D	Minimal Pass	1
F	Failure	0

Students intending to transfer to other institutions should strive for a ‘C-’ as a minimum. Transfer information on each course is available at the [Alberta Council on Admission and Transfers](#).

CLASSROOM AND LABORATORY POLICIES:

- **Regular attendance is expected at lectures and attendance will be taken.** The lectures will often include material which is not in your textbook or the emphasis in class may differ from that in the text; you will be responsible for the material taught. Notes and PowerPoints should be thought of as **study guides**: you must take additional notes in class to do well!
- **You will require a lab coat to work in the lab.** This coat must be worn at all times when you are in the lab, regardless of the activity you are involved in
- **University Studies Department Policy on Cell Phones and Other Electronic Devices:**
Except by express permission of the instructor, cell phones and other electronic devices:
 - a) must be turned off and unavailable for use during class;
 - b) must be turned off and stored in a designated area during all exams;

Note: Lectures, study questions, lab assignments, and textbook readings are all designed to help you succeed in this course. Completing assignments and attending lectures are essential to your success. Students who do not complete all the required work should not expect to pass the course. Good study habits, such as reviewing material in advance of the midterms and participating in class, will also aid your efforts.

IMPORTANT DATES:

Sept 3	Labour Day (no classes)
Sept 18	Courses dropped after this date will be designated “W”. (A withdrawal (W) is not reflected in your GPA)
Oct 8	Thanksgiving (no classes)
Oct 26	Courses dropped after this date will be designated “WF”. (A withdrawal failure (WF) counts as a 0 in your GPA)
Nov 12	Holiday in place of Remembrance Day (no classes)
Dec 7	Last day of classes
Dec10-19	Final Exams

COLLEGE POLICIES

Equality, Equity and Respect

The Keyano College is committed to providing an environment of equality, equity and respect for all people within the College community. All members of this community are considered partners in developing teaching and learning contexts that are welcoming to all. Faculty, staff, and students are encouraged to use inclusive language to create a classroom atmosphere in which students' experiences and views are treated with equal respect and valued in relation to their gender, ethnic and cultural background, and sexual orientation.

Students should consult: <http://keyano.ca/current-students/individual-rights>

Plagiarism and Cheating

Every student expects to be treated and evaluated fairly in a course. Plagiarism and cheating robs everyone of this right.

No student may submit words, ideas or data of another student or person as his or her own in any writing, project, assignment, quiz, electronic presentation, exam etc. Any work used that is not the student's own must be clearly cited as belonging to someone else. There are penalties for using other's work and not citing it. The Student's Rights & Responsibilities document clearly outlines these penalties and the appeal process.

- No learner can obtain information from another student during an exam.
- No learner can bring unauthorized information (paper or electronic) into an exam or quiz.
- No student can submit work done in another course for grading in this course without the written prior approval of the course instructor.
- No student can submit copyright protected or commercially produced materials as part or all of an assignment without proper citation & permission.

Student Rights & Responsibilities

Students should consult the Keyano College Credit Calendar or online at:

[http://keyano.ca/sites/default/files/a_files/calendars/keyano.calendar.credit\(2012-2013\).pdf](http://keyano.ca/sites/default/files/a_files/calendars/keyano.calendar.credit(2012-2013).pdf)

Specialized Supports and Duty to Accommodate

Disability Support Services: Learner Assistance Program

If you have a documented disability or you think that you would benefit from some assistance from a Disabilities Counsellor, please call or visit the Disability Supports Office 780-792-5608 to book an appointment (across from the library). Services and accommodations are intended to assist you in your program of study, while maintaining the academic standards of Keyano College. We can be of assistance to you in disclosing your disability to your instructor, providing accommodations, and supporting your overall success at Keyano College.

Specialized Supports and Duty to Accommodate

Specialized Support and Duty to Accommodate are aligned with the office of Disability Support Services: Learner Assistance Program (LAP) guided by federal and provincial human rights legislation, and defined by a number of Keyano College policies. Keyano College is obligated by legislation to provide disability-related accommodations to students with identified disabilities to the point of undue hardship.