

BIOLOGY 217: Introduction to Cell Biology

Fall 2014

Instructor: Dr. Tyler Donner

Contact information:

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Please do not use Blackboard messages, as I do not check them regularly.

Office hours: MW: 1-2 PM & R: 10-11 AM

Office: 1607C

I will do my best to be in my office during these office hours, but I may have to cancel with little warning due to commitments that come up on short notice. I will be in my office outside these times as well, so please feel free to contact me to set up an appointment or drop by to ask a question or say hi.

Class Meeting Times:

Lectures:

Section A:

TRF: 8-8:50 AM

Room: 1435

Section B:

MW: 3:30-4:20 PM & R: 3-3:50 PM

Room: 2301

Labs are a required component of BIOL 217 and your attendance is **mandatory**. Please contact your lab instructor and see the lab Blackboard course for further details on attendance, content, and schedule. Labs begin the week of Sept 8-12, 2014.

Academic Calendar Entry:

An introduction to cellular and molecular biology. Topics include: biological macromolecules; membrane structure and function; cellular structure; bioenergetics and energy flow; respiration and photosynthesis; cell division and the cell cycle; DNA structure and replication; transcription and translation; recombinant DNA and genetic regulation.

Credit hours: 4

Prerequisites: Biology 30 and Chemistry 30

Note: BIOL 217 and BIOL 218 can be taken in either order.

Course Resources:

- 1). Campbell Biology (10th Ed.). Reece *et al.*, Pearson Education, 2014. ISBN 10: 0-321-77565-1; ISBN 13: 978-0-321-77565-8

Available from the RDC Bookstore (hardcover) or via CourseSmart (e-textbook; <http://www.coursesmart.com/0321839102>). Older versions are perfectly acceptable.

- 2). BIOL 217 Blackboard materials

Access either through the Loop (<https://portal.rdc.ab.ca/cp/home/displaylogin>) or the direct login (<https://rdc-bb.blackboard.com/webapps/login/>)

You will have 2 separate BIOL 217 courses: one for lecture and one for lab. The lecture site will contain the syllabus and lecture notes. The lab Blackboard site will contain the information for lab each week (e.g., lab manual), assignments, and all necessary resources.

There is a materials fee of \$20.00 associated with BIOL 217 to cover the cost of consumable lab supplies used during the course. This fee was included in your tuition and this statement is only here to notify you of this cost.

Course Topics:

This course is divided into three major sections that will represent the three exams.

Topic #		10 th edition	9 th Edition
1	Introduction and overview of the course: big ideas	1-9, 16-24	1-11, 18-24
	CELL ULTRASTRUCTURE		
	<i>Chemistry of Life</i>		
2	The nature of atomic bonds; preconceptions/misconceptions	28-41	30-43
3	Properties of water	44-49	46-51
4	Macromolecules	58-64, 66-89	60-66, 68-89
	<i>The Cell</i>	206-207	
5	Membranes and membrane transport	124-138	125-139
6	Classification of life	93-97, 562-572	94-97, 551-560
7	Organelles	97-112, 351-352, 122	98-108, 343, 123
8	The cytoskeleton	112-117	112-118
9	Cell surfaces and junctions	118-121	118-121
10	Cell Communication	210-227	206-223
	ENERGY FLOW IN LIVING SYSTEMS		
11	Thermodynamics; preconceptions/misconceptions	141-159, 162-167	142-160, 163-167
	<i>Cellular Respiration</i>		
12	Glycolysis	168-169	167-169
13	The Krebs cycle	110, 169-171	109-110, 170-172
14	Chemiosmosis	172-176	172-177
15	Anaerobic respiration, metabolic integration, and summary	177-182	177-181
	<i>Photosynthesis</i>		
16	The light reactions	110-111, 185-199	110-111, 185-197
17	The Calvin cycle	199-200	198-199
18	Photorespiration and summary	201-205	199-203
	INFORMATION FLOW IN LIVING SYSTEMS		
19	Eukaryotic cell division – mitosis; preconceptions/misconceptions	232-248	228-243
20	DNA; preconceptions/misconceptions	312-318	305-310
21	DNA Replication	318-327	311-319
22	Genes, RNA, proteins, and the genetic code (overview)	333-340	325-331
23	Transcription and processing	340-344	331-336
24	Translation	345-351, 357	337-342, 346-348
25	Gene regulation in <i>E. coli</i>	360-364	351-356
26	Bacteriophage, viruses, and prions	392-406	381-394
27	Biotechnology (time permitting)	408-417	396-401

These readings are a guide to the appropriate material in the textbook, not a specific reading assignment. For exams and quizzes, you will be responsible for the material covered in class unless otherwise informed.

Learning Outcomes:

In this course, you will be expected to recall and discuss basic facts and concepts of molecular and cellular biology. Successful students will be able to:

1. Identify the major groups of macromolecules and describe their characteristic structure(s) and functions.
2. Identify the different components of cells, describe the functions of these components, and discuss how molecules move in and out of these cellular compartments.
3. Compare and contrast different types of cells (prokaryotic vs. eukaryotic; plant vs. animal).
4. Describe and discuss how cells meet their requirements for energy through the metabolic processes of cellular respiration and photosynthesis.
5. Describe how cells divide and pass on genetic information to the next generation of cells.
6. Describe how the genetic information stored in DNA is converted into the proteins that make up the cell structure and carry out cellular functions.

7. Explain the concept of emergent properties using BIOL 217 course material.

In addition to these objectives, this course will require you to analyze information and critically think about course material and the scientific process. In lab, you will be actively involved in designing, executing, and analyzing experiments and encouraged to work effectively as a member of a team. Finally, in both lecture and lab you will be encouraged to communicate effectively, both verbally and in writing.

Learning Activities:

The majority of the course material will be delivered by lecture, though supplemental learning activities such as group discussions will also be used. Time will be made every lecture for both questions and discussion of course concepts.

The lab component of BIOL 217 requires you to work cooperatively to design and perform experiments, analyze data, write reports, and develop a variety of technical abilities.

Assessment of Student Performance:

Quizzes	6 %
Exam 1	22 %
Exam 2	22 %
Final	22 %
Lab	<u>28 %</u> (for further details, see your lab instructor's syllabus)
Total	100 %

Your percent grade will be converted to a letter grade that reflects your overall performance based on your relative position in the class and based upon the skills of the class as a whole.

Quiz questions will be representative of the types of questions to expect on exams. Quizzes will consist of 1-2 short answer questions and be given on alternating weeks at the beginning of the first class of the week.

Exam questions will be based on the material covered during class. These questions will be mostly written (short and long answer) and there may be some matching questions. There will be **no** multiple choice questions. Exams will not be cumulative for detailed questions; however, you will be expected to understand and make use of material from earlier in the course.

NOTE: Students should be aware that Alberta universities might not accept a grade lower than C-.

The [Final Examinations Policy](#) and [Practice](#) will be followed with respect to final exams. Please review these documents to ensure you understand the contents and implications of the policy.

Deferred Exams:

A student who has missed or will miss a final exam because of illness, domestic affliction, or other compelling reason should let me know as soon as possible, and must apply to the registrar for a deferred final exam. Be prepared to supply a doctor's note or other verification.

Supplemental Exams:

If a student feels that s/he has not performed as well as expected on the final exam, s/he may apply for a supplemental exam subject to the following conditions: 1) a fee will be charged; and 2) each student is allowed to write a maximum of two supplemental exams per year.

Your responsibilities:

As a student, you have a number of [rights and responsibilities](#). In addition:

- It is the student's responsibility to be familiar with the information contained in the Course Outline and to clarify any areas of concern with the instructor.
- Your attendance is strongly encouraged. There is a strong positive correlation between attending class and academic success. If you miss a class, you are responsible for getting the notes.

Introduce yourself to your neighbours in class and find someone to work with if either of you miss a day.

- Please be respectful to your instructors and fellow students by being punctual. Not only are late arrivals a distraction, you may miss course material and/or quizzes.
- Please be familiar with what constitutes [academic misconduct](#), as well as the consequences. Plagiarism involves submitting work in a course as if it were the student's own work. Plagiarism may involve the act of submitting work in which some or all of the phrasing, ideas, or line of reasoning are alleged to be the submitter's own but in fact were created by someone else.
- Refer to the [Formal](#) and [Informal](#) Student Appeal Policies and the [Student Misconduct Policies](#) if you have questions or concerns about the course outline that cannot be resolved with your instructor.
- Be aware that Personal Counseling, Career, Learning and Disability Services are provided by RDC. Inquire about locations at the Information Desk. It is the student's responsibility to discuss their specific learning needs with the appropriate service provider.
- This course may be eligible for Prior Learning Assessment. Students should refer to the RDC College Calendar for a list of excluded courses.
- Classroom Learning Resources may be available in alternate formats, such as Blackboard.

Changes to the course outline may be made, but only if done in consultation with students and reviewed by the Program lead or his or her designate to ensure completeness and consistency with College and Departmental policies.

Important Dates for the 2014 Fall Term at RDC:

3 Sept	First day of classes for Fall term 2014
5 Sept	Last day to apply for Fall term 2014
11 Sept	<u>Last day to register or add/drop Fall term 2014 or Full-year 2014-2015 courses</u>
11 Sept	Last day for tuition refunds for Fall term 2014 or Full-year 2014-2015 courses
1 October	First day to apply for Fall term 2015
1 Oct	International student application deadline for Winter term 2015
7 Oct	Emergency response day
11 Oct	International student admission document deadline for Winter term 2015
13 Oct	Thanksgiving Day; College closed
24 Oct	Midterm feedback date
10 Nov	Final example schedule posted for Fall term 2014
10 Nov	College open. No credit classes
11 Nov	Remembrance Day; College closed
12 Nov	Credit classes resume
3 Dec	<u>Last day to withdraw from Fall term 2014 courses and receive a WD</u>
3 Dec	Last day of classes for Fall term 2014 courses
8 Dec	First day of final exams for Fall term 2014 courses
13 Dec	Last day of final exams for Fall term 2014 courses
16 Dec	Deferred exams written for Fall term 2014
19 Dec	Last day for submission of final grades for Fall term 2014 courses
22 Dec	Final grades available for Fall term 2014
22 Dec	Last day of course waitlist for Winter term 2014
24 Dec	College closes at noon
25 Dec-1 Jan	Winter holidays; College closed
2 Jan	College open. No credit classes
5 Jan	First day of classes for Winter term 2014
12 Jan	Last day to apply for Supplemental Exams for Fall term 2014
17 Jan	Supplemental exams for Fall term 2014

Program Lead signature:



21 August 2014