



## DEPARTMENT OF SCIENCE

### COURSE OUTLINE – FALL 2015

#### BI1070 – INTRODUCTION TO CELL BIOLOGY

**INSTRUCTOR:** Dr. Shauna Henley, **PHONE:** 539-2439  
PhD  
**OFFICE:** J215 **E-MAIL:** SHenley@gprc.ab.ca

**OFFICE HOURS:** Monday 10:30 – 11:30, Wednesday 1:50 – 2:30,  
Thursday 11:20 – 12:00, Friday 10:50 – 11:30

#### DELIVERY MODE(S):

Lectures – Tues and Thurs, 8:30 – 9:50, Rm J201

Labs – L1 Tues, 2:30 – 5:20, Rm J126

L2 Wed, 2:30 – 5:20, Rm J126

Seminars – S2 Mon, 11:30 – 12:20, Rm J204

S1 Fri, 11:30 – 12:20, Rm G111

**PREREQUISITE(S)/COREQUISITE:** Biology 30 and Chemistry 30

#### REQUIRED TEXT/RESOURCE MATERIALS:

1. “Biology” by Campbell *et al.* (1<sup>st</sup> Canadian Edition), Benjamin Cummings Publishing Company.
2. “Biology on the cutting edge” edited by Gillies & Hewitt (2011), Pearson Canada Publishing Company.
3. University of Alberta, Biology 1070 Laboratory Manual 2015/16.

**CALENDAR DESCRIPTION:** All life functions are based on cells, and this course will provide an introduction to cell structure and function. Major topics will include the origin of life, the development of prokaryotic and eukaryotic cell lineage, energy conversions, the compartmentalization of biochemical functions within a cell and

communication from cell to cell. The genetic control of cell activities is examined through methods of molecular genetic analysis and their application in genetic engineering and biotechnology.

**CREDIT/CONTACT HOURS:** 3 Credits (3-1-3) UT, 105 hours

**LEARNING OUTCOMES:**

1. To gain an understanding of the structures and functions of basic components of prokaryotic and eukaryotic cells.
2. To gain a knowledge of the cellular components underlying cell movement and cell division.
3. To understand the flow of energy and information in cells and apply this knowledge to cell biology.
4. To develop the ability to design, analyze and report the findings of scientific experiments.
5. To foster critical thinking skills.

**COURSE OBJECTIVES:**

Upon completion of the course, students should be able to:

1. Apply knowledge of the structure of molecules and cells to explain how energy, matter, and information moves within and between cells of eukaryotes and prokaryotes.
2. Apply knowledge of laboratory skills and techniques to generate data and conduct analyses of that data.
3. Demonstrate written communication skills in laboratory reports and seminars.

**COURSE SCHEDULE:**

	Topics	Required Text Readings (pages)	
		1 <sup>st</sup> edition	9 <sup>th</sup> edition
1.	Introduction to BI 1070		
2.	Chemistry Review	35-46, 64-96	32-42, 58-89
3.	Classification of Organisms	12-14, 589-591, 606-613	12-14, 551-553, 566-573
4.	Cell Membranes	135-149	125-139
5.	Prokaryotic Cell Structure	595-599	556-559
6.	Cell structure – Organelles	108-122	98-111
7.	Cytoskeleton and Molecular Motors	123-128	112-118
8.	Cell walls and Extracellular Matrix	128-131	118-121

9.	Biological Order and Energy	152-170	142-160
10.	Glycolysis & Anaerobic Metabolism	173-180, 188-190	163-169, 177-180
11.	Citric Acid Cycle (Kreb's Cycle)	181-182	170-172
12.	Electron Transport Systems	183-188	172-177
13.	Chloroplasts and Photosynthesis	196-206	184-193
14.	Photosynthesis - Light Reactions	206-210	193-197
15.	Calvin Cycle and Photorespiration	210-216	197-203
16.	Bacterial Cell Growth	251-252, 599-603	236-237, 559-564
17.	Cell Division, Mitosis, Meiosis	243-251, 253-259, 268-276	228-236, 238-243 250-257
18.	DNA Chemistry	328-334	305-310
19.	The Eukaryotic Nucleus	344-346	320-322
20.	DNA Replication	334-344	311-319
21.	Genes, mRNA and Proteins	349-356	325-331
22.	Transcription and RNA Processing	356-361	331-336
23.	Regulation of Transcription	377-390	351-364
24.	Translation	361-370	337-346
25.	Viruses, Phages, Viroids, and Prions	409-424	381-394

**EVALUATIONS:** Midterm Exam – 20%  
Final exam – 35%  
Laboratory – 35%  
Seminar – 10%

The midterm exam will be held in class on **Thursday October 15**. The final exam will be cumulative and will take place during the scheduled exam period. Failure to write the midterm or exam will result in a grade of zero unless appropriate documentation is provided.

**GRADING CRITERIA:**

GRANDE PRAIRIE REGIONAL COLLEGE			
GRADING CONVERSION CHART			
Alpha Grade	4-point Equivalent	Percentage Guidelines	Designation
A <sup>+</sup>	4.0	90 – 100	EXCELLENT
A	4.0	85 – 89	
A <sup>-</sup>	3.7	80 – 84	FIRST CLASS STANDING
B <sup>+</sup>	3.3	77 – 79	
B	3.0	73 – 76	GOOD
B <sup>-</sup>	2.7	70 – 72	
C <sup>+</sup>	2.3	67 – 69	SATISFACTORY
C	2.0	63 – 66	
C <sup>-</sup>	1.7	60 – 62	
D <sup>+</sup>	1.3	55 – 59	MINIMAL PASS
D	1.0	50 – 54	
F	0.0	0 – 49	FAIL
WF	0.0	0	FAIL, withdrawal after the deadline

**STUDENT RESPONSIBILITIES:** Students are expected to attend all classes, seminars and laboratory sessions. All assignments must be completed in full and handed in by the date specified. Refer to the College Policy on Student Rights and Responsibilities at [www.gprc.ab.ca/d/STUDENTRIGHTSRESPONSIBILITIES](http://www.gprc.ab.ca/d/STUDENTRIGHTSRESPONSIBILITIES)

**STATEMENT ON PLAGIARISM AND CHEATING:**

Refer to the College Student Misconduct: Academic and Non-Academic Policy at [www.gprc.ab.ca/d/STUDENTMISCONDUCT](http://www.gprc.ab.ca/d/STUDENTMISCONDUCT)

\*\*Note: all Academic and Administrative policies are available at [www.gprc.ab.ca/about/administration/policies/](http://www.gprc.ab.ca/about/administration/policies/)

**UNIVERSITY TRANSFER:** UA, UC, UL, AU, AF, CU, KUC

\*\* Grade of D or D+ may not be acceptable for transfer to other post-secondary institutions. Students are cautioned that it is their responsibility to contact the receiving institutions to ensure transferability. Please refer to the Alberta Transfer guide for current transfer agreements: [www.transferalberta.ca](http://www.transferalberta.ca)