



DEPARTMENT OF SCIENCE

COURSE OUTLINE - Winter 2018

BI 1070 A3 - INTRODUCTION TO CELL BIOLOGY

INSTRUCTOR: Dr. Sean Irwin, Ph.D. **PHONE:** 539-2860 (W); 567-2226 (H)

OFFICE: J221 **E-MAIL:** sirwin@gprc.ab.ca

OFFICE HOURS: Tues. and Thurs. 10 - 11:20; Wed. 1 - 2:20 pm

PREREQUISITES: Biology 30 and Chemistry 30

REQUIRED TEXT/RESOURCE MATERIALS:

“Biology” by Campbell *et al.* (2nd Canadian ed., 2018 or 1st Canadian ed., 2014)
Benjamin Cummings Publishing Company.

“Biology on the Cutting Edge” Edited by Gillies and Hewitt (2011), Pearson Canada
Publishing Company.

Biology 1070 Laboratory Manual, University of Alberta 2017/18

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

DELIVERY MODE(S): Lectures – Mon. and Wed. 10 – 11:20, Rm. J203
Labs - L1 Tues. 2:30 – 5:20, Rm. J126
L2 Wed. 2:30 – 5:20, Rm. J126
Seminars - S1 Fri. 10:00 – 10:50, Rm. J201
S2 Mon. 11:30 – 12:20, Rm. J203

OBJECTIVES: 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.

TRANSFERABILITY: 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

EVALUATIONS:

Midterm Exam	- 20%
Final Exam	- 35%
Laboratory	- 35%
Seminars	- 10%

STATEMENT ON PLAGIARISM AND CHEATING:

Refer to the Student Conduct section of the College Admission Guide at <http://www.gprc.ab.ca/programs/calendar/> or the College Policy on Student Misconduct: Plagiarism and Cheating at www.gprc.ab.ca/about/administration/policies/**

GRADING CRITERIA:

GRANDE PRAIRIE REGIONAL COLLEGE			
GRADING CONVERSION CHART			
Alpha Grade	4-point Equivalent	Percentage Guidelines	Designation
A⁺	4.0	90 – 100	EXCELLENT
A	4.0	85 – 89	
A⁻	3.7	80 – 84	FIRST CLASS STANDING
B⁺	3.3	77 – 79	
B	3.0	73 – 76	GOOD
B⁻	2.7	70 – 72	
C⁺	2.3	67 – 69	SATISFACTORY
C	2.0	63 – 66	
C⁻	1.7	60 – 62	
D⁺	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

**Note: all Academic and Administrative policies are available on the same page.

COURSE SCHEDULE/TENTATIVE TIMELINE: Winter 2018

	Topics	Required Text Readings (pages)	
		1 st edition	2 nd edition
1.	Introduction to BI 1070		
2.	Chemistry Review	35-46, 64-96	32-45, 63-95
3.	Classification of Organisms	12-14, 589-591, 606-613	11-12, 598-600, 614-622
4.	Cell Membranes	135-149	136-151
5.	Prokaryotic Cell Structure	595-599	603-613
6.	Cell structure – Organelles	108-122	108-122
7.	Cytoskeleton and Molecular Motors	123-128	123-129
8.	Cell walls and Extracellular Matrix	128-131	129-132
9.	Biological Order and Energy	152-170	154-172
10.	Glycolysis & Anaerobic Metabolism	173-180, 188-190	175-182, 191-193
11.	Citric Acid Cycle (Kreb’s Cycle)	181-182	182-185
12.	Electron Transport Systems	183-188	185-191
	Midterm	Wednesday February 28th	
13.	Chloroplasts and Photosynthesis	196-206	198-208
14.	Photosynthesis - Light Reactions	206-210	208-212
15.	Calvin Cycle and Photorespiration	210-216	212-218
16.	Bacterial Cell Growth	251-252, 599-603	251-252, 606-612
17.	Cell Division, Mitosis, Meiosis	243-251, 253-259, 268-276	243-251, 253-260 268-278
18.	DNA Chemistry	328-334	329-335
19.	The Eukaryotic Nucleus	344-346	345-348
20.	DNA Replication	334-344	335-345
21.	Genes, mRNA and Proteins	349-356	351-358
22.	Transcription and RNA Processing	356-361	358-363
23.	Regulation of Transcription	377-390	380-394
24.	Translation	361-370	363-376
25.	Viruses, Phages, Viroids, and Prions	409-424	414-431